Part 4
Empirical Papers
The papers presented in this part of the Reader are examples of good quality and innovative research in the field of health policy and systems.

Overview: research strategies and papers

Doing good quality Health Policy and Systems Research (HPSR) demands an understanding of what research strategy is appropriate to the questions of focus. The strategy is neither primarily a study design nor a method, but instead represents an overarching approach to conducting the research that considers the most appropriate methods of data collection and sampling strategy for the research purpose and questions.

The introduction to each group of papers includes:

- an overview of the research strategy or approach, its relevance to HPSR and brief clarification about how to ensure rigour when conducting such research;
- a brief description or overview of the selected papers;
- a summary of papers with reference details, focus of the study, the perspective it takes, and the rationale for its selection in the Reader.

A summary of the papers is given in Table 9.

The papers provided here are grouped by research strategy in order to encourage critical and creative thinking about the nature and approach of HPSR, and to stimulate new research that goes beyond the often quite descriptive cross-sectional analyses that form the bulk of currently published work in the field. The research strategies were chosen to demonstrate the breadth of HPSR work, covering both dominant and emerging approaches in the field. They are:

1. Cross-sectional perspectives
2. The case-study approach
3. The ethnographic lens
4. Advances in impact evaluation
5. Investigating policy and system change over time
6. Cross-national analysis
7. Action research
Table 9  Overview of papers presented

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<th>Disciplinary perspective (or key approach)</th>
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| 75      | Blauuw et al., 2010 | Human resources (incentive packages) | Micro: Health workers | Health economics | • Use of discrete choice experiments and economic evaluation  
  • Example of analysis for policy | Multi-country |
| 83      | Glassman et al., 1999 | Governance and financing (policy change, health systems reform) | Macro: National | Policy analysis | • Application of ‘policy-maker’ in analysis  
  • Example of analysis for policy | Dominican Republic |
| 95      | Morrow et al., 2009 | Service delivery (malaria control) | Meso and micro: Primary level/community | Public health | • Mixed-method study  
  • Considers both demand and supply issues | Viet Nam |
| 105     | Ramanadhan et al., 2010 | Human resources (capacity development) | Micro: Health workers | (Social network analysis) | • Use of network analysis and exploration of social capital issues | Ethiopia |
| 116     | Ranson, Jayaswal & Mills, 2011 | Financing (household expenditures) | Micro: Households | Health economics | • Sequential use of methods in mixed-method study | India |
| 129     | Riewpaiboon et al., 2005 | Service delivery (provider – patient interactions, obstetric care) | Micro: Hospital and individual | Sociology/Anthropology | • Theory building  
  • Examination of institutions of health system | Thailand |
<p>| 139     | Rwashana, Williams &amp; Neema, 2009 | Vaccines and service delivery (immunization programme, nested in health system) | Macro: System | (Systems thinking) | • Rare example of use of systems thinking | Uganda |
| 152     | Sheikh &amp; Porter, 2010 | Governance and service delivery (HIV clinical guideline implementation) | Micro: Individual | Policy analysis | • Detailed and theory-driven examination of decision-making | India |</p>
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| 166     | Atkinson et al., 2000 | Governance (decentralization) | Meso: Districts and facilities | Anthropology | • Districts as cases  
• Theory building  
• Examination of complex causality | Brazil |
|         | Murray & Elston, 2005 | Financing (private insurance) | Cross-level | Sociology | • Integrated analysis of policy change across system layers | Chile |
| 184     | Mutemwa, 2005 | Health information and governance (decision-making at district level) | Meso: District | Management | • Exploratory case analysis | Zambia |
| 197     | Rolfe et al., 2008 | Human resources (private sector) | Meso: District and facility | Sociology | • Strong example of analysis in case study work  
• Analysis for policy | United Republic of Tanzania |
| 210     | Russell & Gilson, 2006 | Financing (household expenditure) | Micro: Households | Development economics | • Use of longitudinal household cases  
• Examination of complex causality | Sri Lanka |
| 223     | Shiffman, Stanton & Salazar, 2004 | Governance (policy change, Safe Motherhood Initiative) | Macro: National/global | Policy analysis | • Use of theory and generation of questions from analysis | Honduras |

3. THE ETHNOGRAPHIC LENS

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<th>Disciplinary perspective (or key approach)</th>
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<tr>
<td>Aitken, 1994</td>
<td>Human resources (training programmes)</td>
<td>Micro: Health workers</td>
<td>Anthropology/Sociology</td>
<td>• Theory building</td>
<td>Nepal</td>
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<tr>
<td>239</td>
<td>Behague &amp; Storeng, 2008</td>
<td>Governance and service delivery (debates about approaches to maternal health care provision, and evidence-based policy-making)</td>
<td>Macro: Global debates</td>
<td>Anthropology/Sociology</td>
<td>• Discourse analysis</td>
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<td>Page no</td>
<td>Paper</td>
<td>System function(s) of focus</td>
<td>Policy/System level addressed</td>
<td>Disciplinary perspective (or key approach)</td>
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<td>3. THE ETHNOGRAPHIC LENS (CONTINUED)</td>
<td>George, 2009</td>
<td>Human resources and governance (management, accountability)</td>
<td>Micro: Health worker-supervisor interactions and influences</td>
<td>Anthropology/Sociology</td>
<td>• Rich analysis of key health system functions</td>
</tr>
</tbody>
</table>
| 245     | Lewin & Green, 2009 | Service delivery (primary care clinic) | Micro: Clinic, provider-patient interactions | Anthropology/Sociology | • Use of concepts  
|         | | | | | • Programme and facility focus | South Africa |
| 4. ADVANCES IN IMPACT EVALUATION | Björkman & Svensson, 2009 | Governance (community accountability mechanism) | Meso: Facility/community | Health economics | • Quasi experimental evaluation  
|         | | | | | • Unusual focus for this evaluation approach | Uganda |
| 292     | Macinko et al., 2007 | Service delivery (primary care model) | Macro: National | Epidemiology | • Ecological analysis using available panel data | Brazil |
| 303     | Marchal, Dedzo & Kegels, 2010 | Human resources (management) | Meso: Facility | (Policy evaluation/ Critical realism) | • Rare example of critical realist evaluation | Ghana |
| 320     | Wang et al., 2009 | Financing (community-based health insurance) | Micro: Household | Health economics | • Unusual quasi-experimental evaluation, using propensity matching scores | China |
| 5. INVESTIGATING POLICY AND SYSTEM CHANGE OVER TIME | Brown, Cueto & Fee, 2006 | Governance (global organizations and discourse) | Macro: Global | History | • Historical analysis  
<p>|         | | | | | • Global organization focus | N/A |
| 331     | Crichton, 2008 | Governance and service delivery (policy change, family planning) | Macro: National | Policy analysis | • Use of theory | Kenya |
| 343     | Masanja et al., 2008 | Service delivery (child mortality trends and explanations) | Macro: System | Epidemiology | • Rich trend analysis with explanation around system development | United Republic of Tanzania |</p>
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| 351     | Van Ginneken, Lewin & Berridge, 2010 | Human resources (community health workers) | Macro: National | History | - Historical analysis  
- Unusual use of witness seminars | South Africa |
| 363     | Bryce et al., 2005 | Service delivery (Integrating Management of Childhood Illness approach) | Meso: Districts and facilities | Epidemiology | - Seminal paper  
- Careful system evaluation | Multi-country |
| 369     | Gilson et al., 2001 | Governance and financing (implementing policy change, Bamako Initiative community financing schemes) | Cross-level | Policy analysis | - Conceptual framework used to guide study  
- Opportunistic country cases selected  
- Explanatory focus | Multi-country |
| 400     | Lee et al., 1998 | Governance and service delivery (sustaining family planning policy implementation) | Macro: National | Policy analysis | - Deliberate country cases selected  
- Careful analysis  
- Explanatory focus | Multi-country |
| 411     | O'Donnell et al., 2007 | Financing (public spending incidence) | Macro: National | Health economics | - Rigorous cross-country analysis, with explanation | Multi-country |
| 445     | Khresheh & Barclay, 2007 | Health Information (hospital records system) | Meso: Hospital | Action research | - Rare application of research strategy | Jordan |
| 461     | Khresheh & Barclay, 2008 | Health Information (hospital records system) | Meso: Hospital | Action research | - Account of action research | Jordan |
1. Cross-sectional perspectives

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Cross-sectional studies may seek to explore, describe or explain a phenomenon at a particular moment in time (see Part 2: Step 2 of this Reader). This distinguishes them from longitudinal and other studies which describe or analyse change over time, and experimental studies which involve interventions. As cross-sectional studies generally require fewer resources than other research strategies, they are the most frequently performed and reported type of research in HPSR.

Cross-sectional studies encompass a wide universe of disciplinary perspectives and methods from both the fixed and flexible research traditions. They range from single to mixed (quantitative and qualitative) and multi-method forms of data collection (when the phasing of fixed and flexible research designs allows triangulation from one data collection approach to inform the other and epistemological triangulation, as well as use of secondary data sources). While mixed-method cross-sectional studies may share features of the case study method they do not necessarily follow the same analytic procedures.

As also noted in Part 2: Step 2, HPSR mixed-method studies serve a number of purposes (Pope & Mays, 2009):

- In the process of tool design, qualitative interviews may precede the development of quantitative instruments, in instances where standardized tools may not exist or the context specificity of the phenomenon requires tailored approaches.
- A quantitative survey may be conducted to provide a sampling frame to select cases for qualitative study.
- To extend the analysis and interpretation, different studies may be triangulated to provide different perspectives on the same question or may answer different kinds of questions (for example 'what' versus 'why' questions).

Depending on the purpose, data collection in mixed-method studies can be either concurrent or sequential (Creswell & Plano-Clark, 2007).

The findings of such studies often involve what can be described as a ‘bricolage’, a “pieced together close-knit set of practices that provide solutions to a problem in a concrete situation” (Denzin & Lincoln, 1998:3). The study components provide different insights into a phenomenon and are combined as pieces in a puzzle to explain the phenomenon of focus.

Rigour in cross-sectional studies

As with other research strategies, research validity/trustworthiness and reliability are important in cross-sectional studies, whether from the fixed or flexible traditions. Such concerns are especially important in HPSR seeking to shed light on the complex dynamics and relationships between system actors and dimensions (see Part 2: Step 1).

The validity of cross-sectional studies may be undermined by (Robson, 2002:171):

- inadequate or insufficient description of a phenomenon;
- problematic interpretation through selective use of, or inappropriate meanings imposed on, data;
- explanations drawn without considering alternatives or ‘counterfactuals’;
- failure to draw on existing concepts and theory in the literature.

The validity of cross-sectional studies can be enhanced by (Pope & Mays, 2009):

- triangulation of data, observers, methodological approaches, and with theory;
- member checking (asking respondents to validate the findings and analysis);
clear description of methods of data collection and analysis;
- reflexivity by the author (reflecting on how their own personal or intellectual biases may have influenced the study and analysis);
- attention to, and discussion of, negative cases (incidents or experiences that are unusual in terms of the dominant pattern of findings and the possible explanations of which are then specifically discussed in analysis to clarify their implications for the broader set of findings).

References


Overview of selected papers

For this Reader we have specifically selected cross-sectional studies which demonstrate data collection or analytic techniques that go beyond the most commonly used approaches of key informant interviews or straightforward content analysis. The selection includes examples of:

- discrete choice experiments (DCEs), derived from the economic theory of demand, examining nurses’ preferences for policy interventions that would attract them to rural areas in three countries (Blaauw et al., 2010) – this innovative study also shows the context specificity of health policy and systems interventions and offers guidance for policy-makers;
- the use of PolicyMaker, a computer-assisted political analysis tool to study health policy reform in the Dominican Republic and draw out guidance for policymakers (Glassman et al., 1999);
- a multi-method study that includes observations, use of routine data and multi-stakeholder interviews to construct a model of the demand and supply side dimensions of poor malaria control in Viet Nam (Morrow et al., 2009);
- the application of social network analysis, an unusual and interesting analytic approach for HPSR, to evaluate the impact of health management training in Ethiopia (Ramanadhan et al., 2010);
- a mixed-method study in which qualitative and quantitative methods are used sequentially to examine the coping strategies used by households to manage the costs of hospital inpatient care in India (Ranson, Jayaswal & Mills, 2011);
- building explanatory frameworks for the choice of public or private obstetric care provider among women of different socio-economic status in Thailand, informed by trust theory (Riewpaiboon et al., 2005) – this study also illustrates the approach and value of theory building in HPSR;
- the use of systems theory to explain uptake of immunization in Uganda, drawing on causal loop diagram methodology to model the relationships in a complex system (Rwashana, Williams & Neema, 2009);
- the use of detailed interpretive analysis in a study of how policy actors’ understandings influence HIV policy implementation in India (Sheikh & Porter, 2010).
Some of the different purposes of mixed or multi-method approaches are highlighted in two of these papers. Ranson, Jayaswal & Mills (2011) report a study in which focus group discussions were conducted to develop a closed-ended survey tool. The survey, in turn, identified a group of poorer patients for further in-depth interviews. The study reported by Morrow et al. (2009), meanwhile, involved 17 different forms of data collection, sequenced in a ‘formative’ stage that assisted in the design of a subsequent ‘assessment’ phase. The paper draws together data, like pieces of a puzzle, to present an explanatory model of the systems and social (non-biological) factors underlying pockets of poor malaria control.

**References for selected papers**


[http://dx.doi.org/10.2471/BLT09.072918](http://dx.doi.org/10.2471/BLT09.072918)


[http://heapol.oxfordjournals.org/content/14/2/115.full.pdf](http://heapol.oxfordjournals.org/content/14/2/115.full.pdf)


[http://dx.doi.org/10.1186/1478-4491-8-17](http://dx.doi.org/10.1186/1478-4491-8-17)


[http://dx.doi.org/10.1093/heapol/czr044](http://dx.doi.org/10.1093/heapol/czr044)


[http://dx.doi.org/10.1016/j.socscimed.2004.11.075](http://dx.doi.org/10.1016/j.socscimed.2004.11.075)


[http://dx.doi.org/10.1177/1460458209102971](http://dx.doi.org/10.1177/1460458209102971)


[http://dx.doi.org/10.1016/j.socscimed.2010.09.019](http://dx.doi.org/10.1016/j.socscimed.2010.09.019)

Policy interventions that attract nurses to rural areas: a multicity discrete choice experiment

D Blaauw, E Erasmus, N Pagaiya, V Tangcharoensathien, K Mullei, S Mudhune, C Goodman, M English & M Lagarde

Objective To evaluate the relative effectiveness of different policies in attracting nurses to rural areas in Kenya, South Africa and Thailand using data from a discrete choice experiment (DCE).

Methods A labelled DCE was designed to model the relative effectiveness of both financial and non-financial strategies designed to attract nurses to rural areas. Data were collected from over 300 graduating nursing students in each country. Mixed logit models were used for analysis and to predict the uptake of rural posts under different incentive combinations.

Findings Nurses’ preferences for different human resource policy interventions varied significantly between the three countries. In Kenya and South Africa, better educational opportunities or rural allowances would be most effective in increasing the uptake of rural posts, while in Thailand better health insurance coverage would have the greatest impact.

Conclusion DCEs can be designed to help policy-makers choose more effective interventions to address staff shortages in rural areas. Intervention packages tailored to local conditions are more likely to be effective than standardized global approaches.

Introduction

The shortage of health workers in the areas where they are most needed is an important problem for health systems. Patients who have the greatest need for health care tend to live in remote and rural areas, but attracting skilled health workers to such areas and retaining them there has proved difficult. Such an uneven distribution of health workers contributes directly to the global burden of ill health and inequality in health outcomes. Thus, it will not be possible to improve health outcomes globally unless more health workers are attracted to work in rural and remote areas.

The factors that often motivate health workers to stay in remote areas have been extensively studied. Several strategies have been proposed to address the problem, including changing student selection criteria; improving educational opportunities for workers; introducing financial incentives; creating more supportive working environments; and making it compulsory for health professionals to work in underserved areas. However, the potential impact of these policy interventions, either singly or in combination, remains undetermined. Recent systematic reviews have invariably concluded that few rigorous studies evaluating the impact of rural recruitment and retention strategies have been conducted.

In the Cochrane review, for example, not a single controlled study met the inclusion criteria. What is needed is more evidence, not more reviews, yet just how such new evidence will be generated remains unclear, particularly for low- and middle-income countries. Evaluating the effectiveness of human resource interventions is not the same as testing a drug for efficacy. Many human resource strategies require national policy changes and few are amenable to controlled studies. Governments and donors should be encouraged to introduce human resource interventions under more controlled conditions that allow proper evaluation, but previous calls to strengthen the monitoring and evaluation of health reforms in low- and middle-income countries have had little impact.

In addition, statistically significant evidence of impact in well controlled trials may not be sufficient for informing practical policy decisions. The results of many human resource strategies are, in some measure, self-evident. Rural financial incentives are likely to improve rural recruitment and retention, but the critical questions are how much money is required to achieve a certain impact and how do financial strategies compare to other policy options, either individually or in combination. The answers to these questions will certainly vary between settings. What policy-makers actually need is information on the relative impact and cost-effectiveness of different packages of human resource interventions in a variety of contexts. Rigorous evaluation methods to answer such questions are not currently available.

In the meantime, more modelling studies could be carried out to determine the probable outcomes of different policy scenarios. Stated preference discrete choice experiments (DCEs) are a promising method for conducting human resource research in low- and middle-income countries. They are a quantitative technique for evaluating the relative influence of different product attributes on consumer choices and have come to be used widely in health services research, primarily to assess patients’ preferences and willingness to pay for different models of health service delivery. However, DCEs have been used in recent studies to assess the relative importance of different factors on health workers’ job choices.

The objective of this study was to use data from a DCE to model the relative effectiveness of different policy interventions on the recruitment of nurses to rural areas in three different countries.
Methods

This study was conducted in Kenya, South Africa and Thailand, all three of which have documented shortages of professional health workers in rural areas. Kenya is typical of low-income countries with poor health outcomes, has limited financial and human resources for health, and is largely dependent on donors for new human resource policy interventions. South Africa and Thailand are both middle-income countries with higher per capita health expenditure, sufficient numbers of skilled health workers, and demonstrated capacity to implement policies that make it attractive or compulsory for health professionals to work in rural areas, but they differ in terms of health outcomes. A comparison of key indicators in the three countries is shown in Table 1 (available at: http://www.who.int/bulletin/volumes/88/5/09-072918).

This DCE was part of baseline data collection for a larger longitudinal cohort study we are conducting with recent nursing graduates in the three countries. In accordance with the usual practice in DCE studies, we estimated that a minimum sample of 300 subjects was needed to allow for sub-group analysis. We used a multi-stage stratified cluster sampling strategy. Provinces were purposely selected from rural and urban strata, and nursing colleges were subsequently selected from each province until the required sample size was achieved. All students nearing the end of their training as professional nurses at the selected colleges were invited to participate in the cohort study. Data collection was completed during 2008.

For the DCE we used a labelled choice design with two choices in each choice set. In a labelled experiment the options presented have specific labels, in this case rural job and urban job, whereas in an unlabelled or generic design the options are simply labelled job A and job B. Unlabelled designs are used to determine the value of attributes that are assumed to be generic, while labelled designs produce alternative-specific valuations. Most of the DCE studies in the health economics literature have used generic designs. We had several reasons for using labelled choices. First, we suspected that particular job characteristics were not valued to the same degree in rural versus urban jobs (better housing, for instance, appears to be more highly valued when considering a rural posting rather than an urban one).

Second, labelled choices allowed us to design a model with different attribute levels for the two choices (for instance, the financial incentive applied only to rural jobs). Third, a labelled design allowed for more sophisticated modelling of the impact of policy interventions on nurses’ choice of a rural posting.

In finalizing the DCE tool we followed the standard recommended steps for ensuring rigour. We began by identifying the attributes and levels to be included in the study. Our explicit intention was to focus on job characteristics influencing rural job choices that were amenable to policy intervention and to test their likely impact in different country contexts. To inform the selection of policy options to be included, we reviewed the international literature and conducted preparatory qualitative work in each country, as summarized in Table 2 (available at: http://www.who.int/bulletin/volumes/88/5/09-072918).

Next we completed several iterations of design development and consultation across the three countries to arrive at a similar design that allowed comparisons but also addressed local specificities. Pilot studies were then conducted in each country, and this resulted in further design refinements (Table 2). Table 3 summarizes the final design used in each country. The policy options we evaluated were:

• the introduction of a financial rural allowance, using relative salary increases to facilitate cross-country comparisons;
• the provision of better housing facilities;
• preferential opportunities for specialist training;
• faster rank promotion;
• the provision of a benefit package that differed in each country; and
• a change in workplace culture from hierarchical to relational management.

Facility type was also included in the design because it was identified as an important determinant of health workers’ choices. The financial incentive had four levels to allow for the evaluation of nonlinear effects, while all the other attributes had two levels (Table 3). This specification resulted in a design with 8192 (i.e. $2^{11} \times 4$) possible combinations of attributes and levels. We used DCE macros for SAS (SAS, Cary, NC, United States of America) to select combinations for an orthogonal main effects design, and then to organize the selected profiles into the most D-efficient choice design, given our design parameters. The final design had 16 choice sets. The DCE tool was administered in English in Kenya and South Africa and in Thai in Thailand.

Baseline data collection was conducted with final year nursing students in a classroom setting. We explained the DCE questionnaire to the group, whose members then completed it on their own. Students also completed a second questionnaire with basic demographic information. In each college we also held a focus group discussion that included feedback on the DCE questionnaire (Table 2).

Data from the DCE were entered, cleaned and analysed using STATA v9.0 (Stata Corp., College Station, TX, USA) and Nlogit version 4.0 (Econometric Software Inc., Plainview, NY, USA). The basic analysis was performed with a multinomial logit model. For the cross-country comparison we used both country-specific and pooled models. Analysis of pooled DCE data using a multinomial logit model is problematic because the model’s coefficients are confounded with the scale parameter ($\lambda$), which is inversely proportional to the error variance of the model. This complicates comparisons between data sets, since observed differences in coefficients may be scale (variance) effects rather than real differences. The problem is well known for analyses that combine revealed and stated preference data and requires more complex statistical modelling. Following Rose et al. we used an error components mixed logit model for the analysis and the Chow test to formally test differences between coefficients. Odds ratios (ORs) and their confidence intervals (CIs) were used to compare the relative importance of attributes, while the preferences of different subgroups were evaluated by including interaction terms in the regression models. Finally, the results of the mixed logit models were used to predict the effect of different attribute (policy) changes on the proportion of nurses choosing a rural job.

National and international ethical standards were maintained throughout the research project. The research protocol was reviewed by the ethics committees of the academic institutions of the researchers in Kenya, South Africa, Thailand and the United Kingdom of Great Britain and Northern Ireland. Permission to conduct the research was also obtained from the relevant governmental and educational authorities in each country.
Special theme – Health workforce retention in remote and rural areas
Policy interventions to attract nurses to rural areas

D Blauv et al.

Results

Of the 1429 eligible nursing graduates in the selected colleges, 1064 (74.5%) agreed to participate in the study: 345 in Kenya, 377 in South Africa and 342 in Thailand. The response rates in the three countries were 65.2%, 87.9% and 74.7%, respectively. The demographic characteristics of the participants are shown in Table 4. The Thai nursing students were much younger and predominantly female, unmarried and childless, whereas the students from Kenya and South Africa were older, many were married and more than half had children. Kenya had the highest proportion of male students. Students of rural origin were in the majority in Kenya and Thailand but made up slightly less than half of the South African participants.

The results from the mixed logit model are represented diagrammatically in Fig. 1, which compares the impact of different policy interventions and individual characteristics on the odds of choosing a rural job in each country. For simplicity, the figure does not show the rural constant or urban attributes, but these were included in the model. The statistical model shown correctly predicted 60.0% of the responses from Kenya, 62.6% of the responses from South Africa and 75.2% of the responses from Thailand. All policy interventions shown in Fig. 1 yielded statistical significance as factors influencing the choice of a rural job (at the 0.05 level), except for better promotion opportunities in Thailand and a change in management culture in South Africa. Of the individual characteristics, only rural origin showed statistical significance in all three countries.

Fig. 1 suggests that preferences for different human resource policy interventions vary between countries. Kenyan nurses were indifferent to the type of facility, whereas Thai respondents were 4.3 (95% CI: 3.3–5.6) times more likely to choose a job in a rural hospital than in a rural health centre, and the South Africans actually preferred rural clinics. In both Kenya and South Africa, the most effective policy interventions to attract nurses to a rural job were the introduction of a financial rural incentive and the provision of preferential access to specialist nursing training. For example, the availability of a 30% rural allowance made South African and Kenyan nurses 12.4 (95% CI: 9.6–15.9) and 7.7 (95% CI: 6.0–10.0) times more likely to choose the rural job, respectively. However, Thai nursing students were only 2.0 (95% CI: 1.5–2.7) times more likely to do so. In South Africa, allowing nurses in rural posts to specialize earlier increased the odds of rural uptake 6.7 times (95% CI: 5.5–8.1) and was a more effective measure than a 20% salary increase. For Thai respondents, improved housing and an expanded health benefit package were more important than a 30% salary increase. Overall, faster promotion and changes in management culture were the factors that least persuaded nurses to accept a rural posting.

In our models, age, gender, marital status and motherhood were not consistent predictors of the choice of a rural job. Thai graduates were too homogeneous to allow us to test some of these factors. Whereas in South Africa students who were younger, single or had children were more likely to choose an urban posting, in Kenya these same groups preferred rural jobs. Female graduates were less likely to choose rural postings, but not significantly. However, in all three countries having been born in a rural area was significantly associated with the choice of a rural job, and the effect was comparable to that of a 10% salary increase. For example, graduates from rural areas in South Africa were more likely to choose a rural job than those from urban settings (OR: 2.7; 95% CI: 1.9–3.6).

The formal statistical testing for differences in model coefficients between countries is shown in Table 5. Most of the differences were highly significant. This confirms that nurses in the three countries valued the human resource policy interventions differently. Table 6 presents the proportion of nurses who would choose a rural job when the mixed logit model was used to simulate the effect of different policy interventions alone or in combination. Thailand is clearly experiencing less difficulty recruiting nurses to work in rural areas than Kenya and South Africa. Even in the absence of any human resource policy intervention, 84.2% of recent Thai nursing graduates would choose a rural job.

Table 3. Attributes included in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Kenya Rural</th>
<th>Kenya Urban</th>
<th>South Africa Rural</th>
<th>South Africa Urban</th>
<th>Thailand Rural</th>
<th>Thailand Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
<td>Dispensary</td>
<td>Hospital</td>
<td>Clinic</td>
<td>Hospital</td>
<td>Health centre</td>
<td>Hospital</td>
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<tr>
<td>Salary</td>
<td>Local entry level</td>
<td>+10%</td>
<td>Local entry level</td>
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<td></td>
</tr>
<tr>
<td>Training</td>
<td>No study leave</td>
<td>1 years’ study leave after 4 years</td>
<td>6 years before study leave</td>
<td>2 years before study leave</td>
<td>2 weeks study leave per year</td>
<td>2 weeks study leave per year</td>
</tr>
<tr>
<td>Housing</td>
<td>Basic</td>
<td>None</td>
<td>Basic</td>
<td>None</td>
<td>Basic</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Superior</td>
<td></td>
<td>Superior</td>
<td></td>
<td></td>
<td>Basic</td>
</tr>
<tr>
<td>Promotion</td>
<td>4 years before promotion</td>
<td>4 years before promotion</td>
<td>2 years before promotion</td>
<td>1 year before promotion</td>
<td>2 years before promotion</td>
<td>1 year before promotion</td>
</tr>
<tr>
<td>Additional benefit</td>
<td>Permanent contract</td>
<td>Permanent contract</td>
<td>None</td>
<td>None</td>
<td>Basic cover</td>
<td>Expanded cover</td>
</tr>
<tr>
<td>Workplace culture</td>
<td>Hierarchical</td>
<td>Relational</td>
<td>Hierarchical</td>
<td>Relational</td>
<td>Hierarchical</td>
<td>Relational</td>
</tr>
</tbody>
</table>

* The actual tools used contained more detailed descriptions of each attribute and level.
rural job, compared with only 43.4% of the nurses in Kenya and 36.0% of those in South Africa. Therefore, even the most effective single policy intervention in Thailand (an expanded health benefit package) would only increase rural uptake by 8.4 percentage points.

However, in South Africa and Kenya the proportion of nurses prepared to work in rural areas could increase dramatically if various human resource strategies were introduced. For example, the model predicts that a 30% rural incentive would increase the proportion of nurses choosing a rural job to 75.0% in South Africa and to 79.8% in Kenya. Preferential access to specialist training would also be particularly effective in Kenya and South Africa but would have no impact in Thailand.

The DCE model can also be used to predict the impact of any combination of policies. Three examples are shown in Table 6. Combining all the non-financial interventions is an effective policy package and would persuade a total of 86.3% of nurses in South Africa, 82.5% of those in Kenya and 98.1% of those in Thailand to opt for a rural position. If all the human resource strategies we included in our design were introduced, more than 95% of nursing students would choose to work in a rural area in all three countries. However, for low- and middle-income countries it may be more practical to introduce a 10% rural allowance combined with preferential training opportunities for nurses in rural areas, a strategy that would increase the rural uptake by 46.0 percentage points in South Africa and 34.0 percentage points in Kenya. In South Africa such a strategy would be more effective than a 30% rural allowance, while in Kenya the impact of the two strategies would be similar. In Thailand, however, the combination of an allowance and training would be relatively ineffective, as it would only result in a 3.3 percentage points increase in the number of nurses choosing rural posts.

**Table 4. Demographic characteristics of respondents in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kenya</th>
<th>South Africa</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>345</td>
<td>377</td>
<td>342</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (%)</td>
<td>31.9</td>
<td>14.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Females (%)</td>
<td>68.1</td>
<td>85.7</td>
<td>95.3</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>31.0</td>
<td>31.5</td>
<td>22.6</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single (%)</td>
<td>54.8</td>
<td>65.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Married (%)</td>
<td>41.7</td>
<td>30.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Divorced/Widowed (%)</td>
<td>3.5</td>
<td>3.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Any children (%)</td>
<td>51.3</td>
<td>61.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Born in rural area (%)</td>
<td>66.1</td>
<td>46.7</td>
<td>83.0</td>
</tr>
</tbody>
</table>

**Discussion**

We have used DCE data to quantify the degree to which nurses in Kenya, South Africa and Thailand are receptive to various incentives and to model the likely impact of different human resource strategies on rural recruitment in those countries. In the absence of data from rigorous evaluation studies, such analyses provide useful insights into the potential effectiveness of different human resource policy interventions. DCEs provide some of the only current evidence on the relative importance health workers attach to different incentives and human resource strategies. Some have argued that packages of interventions are essential for improving the distribution of human resources, and DCEs are one of the few methods available for comparing such packages. In forthcoming publications we will also show how DCE data can be used to model the cost-effectiveness of different human resource strategies.

Our findings confirm that financial incentives are very important in persuading health workers to choose a rural posting, especially in poorer countries, but only if they are fairly large. In our study, a 10% salary increase was relatively ineffective in all three countries (Fig. 1). Non-financial strategies are just as important. Improved housing and accelerated promotion were moderately effective, but preferential access to training and career development opportunities were very powerful non-financial strategies. Similar results have been obtained in other human resource DCE-based studies in low- and middle-income countries. For example, a recent study in the United Republic of Tanzania showed that better educational opportunities and salary increases were the most influential policy levers to attract clinical officers to remote areas. We showed that changes in management culture are relatively unimportant in South Africa, contrary to what previous studies have shown. This is perhaps because young graduates have not developed clear preferences for different management styles. While many preferred more personal, supportive managers, others argued that formal, hierarchical management was needed to maintain discipline and manage resources properly.

Most non-financial strategies have budgetary implications. Thus, both financial and non-financial policy interventions will require a considerable amount of additional financial resources that are not currently available in most low- and middle-income countries. Preferential training opportunities are attractive to health workers because they also provide future economic returns. This was confirmed in our focus group discussions with nursing graduates. Interestingly, however, the impact of certain benefit packages, such as car allowances for rural nurses in South Africa, which are normally reserved for more senior staff, had double the impact expected from their equivalent financial value. The explanation may lie in the prestige attached to such allowances.

Of all the individual characteristics reported here, only rural origin was associated with a significant increase in the likelihood of choosing a rural job. This suggests, however, that preferential selection of rural students by training institutions can be an effective strategy, and it also lends support to claims that student selection policies are a key component of human resource intervention packages.

The limitations of DCEs have been clearly acknowledged elsewhere: they can only include a restricted set of attributes, which limits their range and realism; and they rely on stated preferences, not actual decisions, but the analysis of revealed preference data is not always straightforward. Finally, the complexity of DCE design and analysis restricts widespread application, and failure to keep up with methodological developments can compromise study rigour and validity.

Ours is the largest DCE-based study of human resources in low- and middle-income countries to date, but producing nationally-representative data will require larger sample sizes, complex sampling strategies and more resources.
This study, which is one of the first labelled DCE studies and the first multicountry DCE that we could identify in the health literature, has demonstrated the more advanced modelling that is possible with labelled DCEs. Labelled designs are of particular relevance to human resource questions but should become more widely used in health research. Only very few multicountry studies exist in the entire DCE literature, probably because they present significant challenges in design and analysis. Nevertheless, they could be used to investigate contextual differences in health worker preferences and responses, an area of research that is underdeveloped to date.

Indeed, much of the discourse and data on health workforce retention in remote and rural areas does not pay sufficient attention to the diversity of individual preferences. It should not be the aim of human resource policy research to identify a proven set of standard strategies to be applied in any context. Our modelling study confirms that both financial and non-financial incentives are effective in motivating nurses to move to rural and remote areas, and that a package of interventions is more effective than a single strategy. However, it has also shown that different countries require completely different combinations of human resource policies. Furthermore, it is likely that nurses and doctors and other categories of health workers will respond differently to a particular set of incentives. In this study we have demonstrated that different subgroups of nurses have different preferences, and in future studies we will compare the choices of different types of health workers. Packages of interventions are likely to be more effective than individual policies in attracting health workers to rural areas not only because individual policies have an additive effect, but because different subgroups of health workers respond differently to different components. DCEs provide an important tool to investigate such individual heterogeneity.

**Conclusion**

This study confirms that DCEs can be designed to assist policy-makers in...
choosing more effective human resource policy interventions to address the shortage of health professionals in rural and remote areas. We have quantified the relative importance of different factors in nurses’ career choices and shown that nurses’ receptivity to various human resource strategies differs substantially between countries. This suggests that intervention packages tailored to local conditions are more likely to be effective than standardized global approaches.

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**Competing interests:** None declared.

### Table 6. Predicted impact of different policy interventions on nurses’ uptake of rural postings in Kenya, South Africa and Thailand, 2006

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Kenya Total uptake</th>
<th>South Africa Total uptake</th>
<th>Thailand Total uptake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change (% points)</td>
<td>Change (% points)</td>
<td>Change (% points)</td>
</tr>
<tr>
<td>Single interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base uptake</td>
<td>–</td>
<td>43.4</td>
<td>–</td>
</tr>
<tr>
<td>10% rural allowance</td>
<td>+15.2</td>
<td>58.6</td>
<td>+16.9</td>
</tr>
<tr>
<td>20% rural allowance</td>
<td>+27.8</td>
<td>71.2</td>
<td>+30.5</td>
</tr>
<tr>
<td>30% rural allowance</td>
<td>+36.4</td>
<td>79.8</td>
<td>+39.0</td>
</tr>
<tr>
<td>Better rural housing</td>
<td>+6.5</td>
<td>49.9</td>
<td>+8.1</td>
</tr>
<tr>
<td>Benefit package</td>
<td>–28.0</td>
<td>15.4</td>
<td>+15.8</td>
</tr>
<tr>
<td>Preferential training opportunities</td>
<td>+21.9</td>
<td>65.3</td>
<td>+35.5</td>
</tr>
<tr>
<td>More rapid promotion</td>
<td>+17.0</td>
<td>60.4</td>
<td>+6.6</td>
</tr>
<tr>
<td>Relational management culture</td>
<td>+5.0</td>
<td>48.4</td>
<td>+3.1</td>
</tr>
<tr>
<td>Intervention packages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing + benefit + training + promotion + relational management</td>
<td>+39.1</td>
<td>82.5</td>
<td>+50.3</td>
</tr>
<tr>
<td>30% allowance + housing + benefit + training + promotion + relational management</td>
<td>+51.7</td>
<td>95.1</td>
<td>+59.2</td>
</tr>
<tr>
<td>10% allowance + training</td>
<td>+34.0</td>
<td>77.4</td>
<td>+46.0</td>
</tr>
</tbody>
</table>

* The benefit package was excluded in Kenya because it decreased rural uptake.

The procedure used to address the shortage of health professionals in rural and remote areas was to develop strategies that could attract more nurses. The different strategies were evaluated in three countries: Kenya, South Africa, and Thailand. The effectiveness of each strategy was assessed by comparing the number of nurses who chose to work in rural areas with and without the strategy. The results showed that the effectiveness of the strategies varied significantly between the countries. In Kenya, the most effective strategy was the provision of financial incentives, while in South Africa, housing and training opportunities were the most effective. In Thailand, the provision of financial incentives alone was not sufficient, and a combination of financial incentives and housing was necessary.

**Résumé**

Comment attirer le personnel infirmier dans les zones rurales? Résultats d’une expérience à choix discrets réalisée dans plusieurs pays.

**Objectif**

Comparer l’efficacité de différentes politiques visant à attirer le personnel infirmier dans les zones rurales au Kenya, en Afrique du Sud et en Thaïlande, en utilisant les données d’une expérience à choix discrets.

**Méthodes**

Une expérience à choix discrets a été conçue pour modéliser l’efficacité des incitations financières et non financières visant à attirer le personnel infirmier dans les zones rurales. Dans chaque pays, des données ont été collectées auprès de 300 élèves infirmiers en fin d’études, puis analysées avec des modèles logit mixtes afin de prédire l’acceptation de postes en milieu rural en fonction de différentes combinaisons de mesures incitatives.

**Résultats**

Les préférences du personnel infirmier pour diverses interventions de réattribution des ressources différaient significativement entre les trois pays. Au Kenya, la rémunération était la plus importante variable influençant le choix du lieu de travail. En Afrique du Sud, les mesures d’incitation financière étaient les plus efficaces, tandis que en Thaïlande, les mesures d’incitation financière et non financière étaient les plus efficaces.

**Funding:** This document is an output from the Consortium for Research on Equitable Health Systems, funded by the UK Department for International Development (DFID) for the benefit of developing countries.

**Competing interests:** None declared.
en milieuo rural, tandis que en Thailande, c’est une meilleure couverture par l’assurance maladie qui aurait le plus d’impact.

**Conclusion**

Des expériences à choix discrets peuvent être conçus pour aider les décideurs politiques à définir les interventions les plus efficaces pour remédier aux pénuries de personnel dans les zones rurales. Des interventions adaptées aux conditions locales seront probablement plus efficaces que des approches standardisées, définies au niveau mondial.

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**Resumen**

Intervenciones de política para atraer a las enfermeras a las zonas rurales: modelo de elección discreta multinacional

**Objetivo**

Evaluar la eficacia relativa de diferentes políticas para atraer a las enfermeras a zonas rurales en Kenia, Sudáfrica y Tailandia utilizando los datos obtenidos mediante un modelo de elección discreta (MED).

**Métodos**

Se diseñó un MED con etiquetas para modelizar la eficacia relativa de la aplicación de estrategias financieras y no financieras para atraer a las enfermeras a las zonas rurales. Se recogieron datos de más de 300 estudiantes de enfermería al término de la carrera en cada país, y se aplicaron modelos logit mixtos para analizar y predecir la ocupación de los puestos rurales en respuesta a distintas combinaciones de incentivos.

**Resultados**

Las preferencias de las enfermeras ante diferentes intervenciones en materia de recursos humanos difirieron significativamente entre los tres países. En Kenia y Sudáfrica, unas mejores oportunidades educativas o la instauración de subsidios rurales serían la fórmula más eficaz para aumentar la ocupación de los puestos rurales, mientras que en Tailandia se conseguiría el máximo impacto ampliando la cobertura del seguro de enfermedad.

**Conclusion**

Es posible diseñar MED que ayudan a las autoridades a elegir las intervenciones más eficaces para hacer frente a la escasez de personal en las zonas rurales. Los paquetes de intervenciones adaptadas a las condiciones locales tienen más probabilidades de ser eficaces que los enfoques mundiales normalizados.

---

**Referencias**

7. Wilson NM, Cooper BJ, De Vries E, Reid S, Fish T, Marais BJ. A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Remote Health* 2009;9:1036. PMID:19530981
Table 1. Key indicators used in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>South Africa</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>National population × 10^6 (1)</td>
<td>36.5</td>
<td>48.3</td>
<td>63.4</td>
</tr>
<tr>
<td>Population in rural areas (%)</td>
<td>79</td>
<td>40</td>
<td>67</td>
</tr>
<tr>
<td>GNP per capita (PPP$)</td>
<td>1,470</td>
<td>8,900</td>
<td>7,440</td>
</tr>
<tr>
<td>Total expenditure on health (% of GDP)</td>
<td>4.6</td>
<td>8.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Per capita expenditure on health (PPP$)</td>
<td>105</td>
<td>869</td>
<td>346</td>
</tr>
<tr>
<td>No. of nurses</td>
<td>37,113</td>
<td>184,659</td>
<td>172,477</td>
</tr>
<tr>
<td>No. of nurses per 10,000 population</td>
<td>12</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>No. of doctors</td>
<td>4,506</td>
<td>34,829</td>
<td>22,435</td>
</tr>
<tr>
<td>No. of doctors per 10,000 population</td>
<td>1</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Life expectancy at birth (years)</td>
<td>53</td>
<td>51</td>
<td>72</td>
</tr>
<tr>
<td>IMR (per 1,000 live births)</td>
<td>79</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td>MMR (per 100,000 live births)</td>
<td>560</td>
<td>400</td>
<td>110</td>
</tr>
<tr>
<td>HIV infection prevalence (%)</td>
<td>6.1</td>
<td>16.6</td>
<td>11.4</td>
</tr>
</tbody>
</table>

GDP, gross domestic product; GNP, gross national product; HIV, human immunodeficiency virus; IMR, infant mortality rate; MMR, maternal mortality ratio; PPP$, purchasing power parity dollar.

Data from the World Health Organization.23

Table 2. Methods for selecting attributes included in discrete choice experiment for assessing the effectiveness of policies to attract nurses to rural areas in Kenya, South Africa and Thailand, 2006

<table>
<thead>
<tr>
<th>Method</th>
<th>Objective(s)</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>International literature review</td>
<td>• Identify strategies that have been used to attract health workers to underserved areas in HICs and LMICs&lt;br&gt;• Review evidence on the effectiveness of existing strategies</td>
<td>Systematic search and review of relevant literature</td>
</tr>
<tr>
<td>Review of the HR DCE literature</td>
<td>• Identify attributes that have been used in previous HR DCEs&lt;br&gt;• Review relative importance of selected attributes</td>
<td>Systematic search and review of relevant literature12</td>
</tr>
<tr>
<td>Review of ministry of health HR policy documents</td>
<td>• Identify policy interventions that have been implemented or proposed in each country&lt;br&gt;• Review evidence on the effectiveness of existing strategies</td>
<td>Systematic search and review of HR policy documents in each country</td>
</tr>
<tr>
<td>Key informant interviews with relevant policy-makers</td>
<td>• Identify policy interventions implemented or proposed in each country&lt;br&gt;• Identify planned policy strategies for the future&lt;br&gt;• Assess feasibility of strategies tried in other countries</td>
<td>Semi-structured interviews with 3–5 senior policy-makers responsible for HR in ministry of health in each country</td>
</tr>
<tr>
<td>Focus group discussions with nursing students</td>
<td>• Obtain student suggestions on important job characteristics and required policy interventions</td>
<td>Focus group discussion in each country with 6–9 final year nursing students from nursing college not selected for final study&lt;br&gt;Semi-structured discussion on factors considered in job choices and attitudes towards working in rural areas</td>
</tr>
<tr>
<td>Pilot study</td>
<td>• Test understanding of DCE task and tool format&lt;br&gt;• Confirm understanding and relevance of DCE attributes and levels</td>
<td>10–20 nursing students in each country from different colleges completed draft tool&lt;br&gt;Semi-structured discussion on responses to DCE tool and attributes&lt;br&gt;DCE results analysed for consistency</td>
</tr>
</tbody>
</table>

DCE, discrete choice experiment; HIC, high-income country; HR, human resource; LMIC, low- and middle-income country.
Political analysis of health reform in the Dominican Republic

AMANDA GLASSMAN¹, MICHAEL R REICH,² KAYLA LASERSON,³ AND FERNANDO ROJAS⁴
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This article examines the major political challenges associated with the adoption of health reform proposals, through the experience of one country, the Dominican Republic. The article briefly presents the problems of the health sector in the Dominican Republic, and the health reform efforts that were initiated in 1995. The PolicyMaker method of applied political analysis is described, and the results of its application in the Dominican Republic are presented, including analysis of the policy content of the health reform, and assessment of five key groups of players (public sector, private sector, unions, political parties, and other non-governmental organizations). The PolicyMaker exercise was conducted in collaboration with the national Office of Technical Coordination (OCT) for health reform, and produced a set of 11 political strategies to promote the health reform effort in the Dominican Republic. These strategies were partially implemented by the OCT, but were insufficient to overcome political obstacles to the reform by late 1997. The conclusion presents six factors that affect the pace and political feasibility of health reform proposals, with examples from the case of the Dominican Republic.

Introduction

In the early 1990s, countries throughout Latin America initiated the process of reforming their health sector policies. These efforts received unprecedented levels of financial support from multilateral institutions, especially the World Bank and the Inter-American Development Bank (IDB). World Bank lending in health in Latin America quadrupled in a five-year period, to over US $900 million a year in 1995 (World Bank 1995). IDB activity added to this total, increasing total lending in the Latin American health sector to nearly US $2.2 billion in 1995, with the expectation that IDB lending in education and health would continue to grow.

Yet little attention has been paid to the major political challenges associated with the adoption and implementation of health reform proposals. Reform is a profoundly political process that affects the allocation of resources in society, and often imposes significant costs on well-organized, politically powerful groups. This article presents a method of political analysis for health sector politics, and identifies key patterns in the politics of health reform proposals. The article uses the experience of one country, the Dominican Republic, to illustrate the political challenges of health reform.

Health sector reform has been variously defined. In this paper, we define health sector reform as those activities undertaken cooperatively between the international development banks and a national government to alter in fundamental ways the nation’s health financing and health provision policies.

This limited definition focuses on the processes around the design and adoption of new health policies, occurring through an interaction between international lending agencies and national government bodies. The proposed policies usually seek to build a self-sustaining national health care financing system as the primary goal. Secondary goals include greater coverage for basic health services at a lower cost per person, rationalized decision-making within public sector health agencies, institutional reform, and expanded access for disadvantaged populations.

Health sector reforms are politically problematic. In many countries considering reform, the most powerful health sector actors are often satisfied with the status quo – despite serious problems in the distribution of health services, quality of care, patterns of utilization, efficiency, and equity. Moreover, the proposed policy changes are often perceived as politically and economically painful decisions in the short term. One of the most important and complex problems in the process of health reforms is the management of these short-term, concentrated costs, and of the powerful groups affected.

Reform proposals create the perception that a major redistribution of the benefits and costs within the health system will occur, but how and when that redistribution will occur is unclear. In contrast to education reform, which usually entails increasing budgets, building new schools, and hiring teachers, health reform seeks to radically alter the social contract between citizens and the government, changing physician payment schemes, introducing patient payments, and limiting reimbursable services to affluent social groups. Politically, health reform proposals resemble structural adjustment policies, but without the national mandate for change accorded to adjustment.¹ In addition, health reform policies confront more complex obstacles in implementation, compared to
structural adjustment policies, because of the nature of the decisions and institutions involved.

Both multilateral institutions and national health reform teams have experienced some difficulty in understanding and navigating the political economy of health sector reform. This paper reports on an effort to try to improve the understanding and the navigation. The paper first reviews a method for applied political analysis. We then explore the background of the Dominican health sector, and apply the method to the reform proposals in the Dominican Republic. Finally, we draw some general conclusions about the political processes of health sector reform.

Applied political analysis

The method of applied political analysis known as PolicyMaker was used in this project to assist decision-makers in analyzing and managing the politics of health reform in the Dominican Republic. The method provides a systematic analysis of the probable consequences of policy reform efforts, the positions of support and opposition taken by key players, the political, financial, and other interests of key players. It then assists decision-makers in initiating the process to design strategies for managing the politics of policy reform (Reich 1996; Reich and Cooper 1996).

In the software format, PolicyMaker uses a series of matrices to guide the analyst through five steps of political strategizing. The framework prompts the analyst to: (1) define the content of the policy under consideration; (2) identify political players, their interests and relationships; (3) analyze opportunities and obstacles to the policy in the political environment; (4) design political strategies; and, (5) assess the potential and actual impacts of proposed strategies. The analyst can complete each matrix, or can be selective according to the objectives of the analysis.

The method assists policy analysts with the political dimensions of policy change in five ways. First, the method provides a systematic assessment of the political environment in which health sector reform policies are formulated and implemented. At a minimum, the method provides a tool to describe the political dimensions of a policy decision, and then to organize and prepare the data for analysis. Second, the method provides practical assistance in the design of political strategies. The software includes a tool box of 31 'expert-suggested' political strategies that can be modified by the user. Third, if conducted by a team analysis, the method helps to make explicit the team's assumptions about how a new policy will be adopted, and forces the team to explain and justify those assumptions. This reflective process helps to enhance the coherence and feasibility of the policy. Fourth, if conducted with interviews of key stakeholders, the method helps validate the reform group's capacity to advocate for reform policies.

Put another way, this method helps policy-makers and policy analysts do what they should do anyway: systematically analyze the support and opposition for a proposed policy; consult with the major stakeholders on their views; analyze opportunities and obstacles to change; design a set of creative and effective strategies for change; and assess and track the processes of implementing those strategies.

In the case of the Dominican Republic, three consultants (AG, KL, MRR) were financed by the IDB to work with the government's health reform group (headed by FR) to define the policy, interview key players, and propose strategies. The analysis was carried out by a team of 'insiders' and 'outsiders', in order to minimize analyst bias through group discussion and collective judgment. As with any social science methodology, however, the method cannot eliminate unpredictable elements in the policy-making process.

In this case, 35 guided interviews with key figures in the health sector were conducted in the Dominican Republic between July and November 1995. Both published and unpublished documents were collected and reviewed, and the national press was monitored closely for one year following the interviews. This paper presents some results of the analysis, and the conclusions reached.

The health sector in the Dominican Republic

The Dominican health sector

The Dominican health sector exhibits a number of systemic problems, typical of many countries in Latin America. These problems include inadequate financing, low coverage, inequitable distribution of services, an emphasis on curative care, fragmented vertical programming, redundant and underused facilities, inefficient institutions and personnel, corrupt bureaucracies, and unregulated private health services.

By the early 1990s, many Dominicans felt that the health sector was in crisis: preventive and curative services were low-quality, irregular, concentrated in the capital and in tertiary care facilities, and highly inefficient. The sector had experienced one of the largest and longest (8 months) strikes in the country's history, with the Dominican Medical Association (Asociación Médica Dominicana – AMD) showing its power to control the functioning of government health services. As in many other countries, doctors work in both the private and public sectors, usually squeezing their public sector obligations, where they are poorly paid, in order to attend to their private practices. Remuneration is not connected to performance. Physicians working in public hospitals regularly refer their patients to their private clinics for procedures, and some physicians use public sector facilities to conduct for-profit procedures.

The Secretariat of Health (SESPAS) and the Social Security Institute (IDSS), the largest institutional actors in the public...
sector, have shown little capacity to respond to the major problems in the health sector. Both institutions have been used extensively for political patronage and have limited technical capacity. The average stay of a Health Secretary is less than eight months. Although almost 60% of the population falls below the poverty line, subsidized government services through the Ministry cover only 35% of the population (Santana and Rathe 1994). SESPAS is organized vertically by programme, and focuses mostly on curative, tertiary level care. IDSS, with its own networks of hospitals and clinics, covers only 6% of the Dominican population. Many businesses now pay double for health care – an obligatory payment to the IDSS, plus payments to cooperatives of private providers for health insurance. Evasion of the IDSS scheme is widespread. As a result, the private sector has grown rapidly but with minimal regulation. The private sector now represents the primary source of health financing and service provision in the Dominican Republic. While health service infrastructure is plentiful in both the public and private sectors, access is highly inequitable since it depends on an individual’s ability to pay. According to the 1991 Demographic and Health Survey, approximately 60% of persons who reported a serious illness in the past month did not seek medical care, principally for economic reasons.

Recent efforts at health reform

The Dominican Republic has experienced several waves of policy responses to problems in the health sector. In November 1992, SESPAS received funding from the United Nations Development Program (UNDP) to undertake a project of ‘modernization’ of the Dominican health system. For more than a year, a group of Dominican professionals elaborated policy proposals for reforms, in consultation with health sector players and with technical assistance from UNDP. Late in 1993, the results were disseminated to policymakers. The proposals included recommendations to rationalize human resources policies, including the introduction of new forms of physician payment, and a ‘new model of care’. For political and financial reasons, including the absence of a forum in which to continue reform discussions, no follow-on activities resulted from this first wave of reform efforts.

The second wave occurred between October and May 1995, when the health commission of the national legislature introduced a ‘National Health Law’, written by deputies from the Partido de la Liberación Dominicana (PLD) with technical assistance from SESPAS and PAHO advisors. While recognizing many of the problems of the sector, the proposed law read like a long list of special-interest programmes. Each disease and programme priority was included, based largely on a ‘traditional’ public health paradigm, while little attention was paid to the methods for financing health services, the roles of existing health sector institutions, or the regulation of the private sector. The bill was intended to replace the Dominican Republic’s ‘Sanitary Code’, which contains special provisions for regular salary raises for doctors working in the public sector. Although these provisions have never been implemented (since 1956), the new law was opposed by the AMD (OCT 1995b). Some perceived the bill as part of pre-electoral political positioning by PLD, rather than a genuine reform effort. Debate around the bill lasted nearly a year, and then died.

At about the same time, in January 1995, an executive decree created the National Health Commission (CNS) with a mandate to promote ‘modernization’ of the health sector. The Office of Technical Coordination (OCT) was created to design a health reform plan under the auspices of the CNS. The OCT operated primarily with project funds from the IDB and the World Bank, with occasional assistance from the Pan-American Health Organization (PAHO), the US Agency for International Development (USAID), and other donors. Initially, the OCT operated under the CNS; however, in 1997, the OCT was shifted organizationally to the SESPAS, although the OCT maintained separate offices in Santo Domingo away from the ministry.

In this third wave of health reform, the OCT was asked to draft a reform ‘white paper’ with technical assistance from consultants in the first half of 1995. The ‘white paper’ was to serve as the basis for assessing the technical feasibility of various reform initiatives and as a first attempt to change the discourse on health sector transformation in the country. Reform studies were commissioned by the OCT from national and international consultants using non-reimbursable technical cooperation monies from the IDB and donated funds from the Government of Japan through the World Bank and the UNDP.

Reform studies addressed the following topics, in chronological order: (1) hospital autonomy; (2) SESPAS re-organization; (3) SESPAS financing systems; (4) IDSS reorganization; (5) prepaid health systems (igualas); (6) incorporating NGOs into health sector reform; (7) survey on use of and satisfaction with health services; (8) financing of public expenditure in health; (9) health expenditure module as part of the DHS; (10) personnel administration systems; (11) burden of disease and basic package definition; (12) pharmaceutical and supply stocks at SESPAS; (13) accreditation and re-equipping health services; (14) decentralization of SESPAS; (15) design of a new social security system; and, (16) a legal and regulatory framework for social security reform in the Dominican Republic (OCT 1995a). As the product of intensive collaboration between the OCT and the multilateral development banks, with a great deal of autonomous leadership from the OCT, the studies were intended to lay the groundwork for implementing reform activities in these 16 specific areas. The OCT has monitored the progress of and payment for the 16 studies.

In addition, the OCT expected to manage the process of reform. For example, the OCT was expected to secure high-level political support for reforms among government leaders, especially the Secretary of Health, the Director of Social Security, and the President of the Republic. More broadly, the OCT was intended to prepare government agencies, other interest groups, and society at large for accepting and implementing the reforms. The reform studies were intended to play a major role in this preparation, and usually involved staff members from the affected institutions.
The OCT ‘white paper’ recommended the following reforms: (1) the separation of financing from provision of services within SESPAS and IDSS; (2) the massive expansion of IDSS coverage; (3) the definition of a cost-effective basic package of services to be financed by the public sector; (4) hospital autonomy; and, (5) linkage of productivity and incentives in the health work force (e.g. through physician contracts). This set of recommendations, published as Salud: Una Vision del Futuro, was taken as the ‘policy’ for this applied political analysis (OCT 1995a).

In 1995, the OCT had seven staff members, primarily technical, with one public relations person part-time. The CNS included 33 health sector ‘actors’ and had no clearly defined decision-making structure, but had taken most decisions through voting. All votes (through November 1995) were unanimous, and voting was initiated by the chair of the CNS, the Secretary of Health.

Political climate

In June 1995, the Dominican Republic was one of the poorest countries in Latin America. In 1988, it had the third lowest Gross Domestic Product (GDP) per capita in the Americas, after Haiti and Bolivia. Despite respectable economic growth rates in the 1980s, the economic crisis (followed by structural adjustment policies) impoverished the country in the 1990s. The Dominican Republic was one of the last of the aging dictatorships in Latin America. When health sector reform design began, Joaquín Balaguer had been president of the country for more than 50 years, off and on. The political system can be categorized as ‘clientelistic’. As one study of Dominican political culture put it, ‘The Dominican political system is theoretically organized along formal democratic principles, however, it is essentially informal operationally’ (AG translation, Cross-Beras 1985). It is a limited pluralist system without accountability, and without an explicit political ideology. Most decisions, national or otherwise, were taken by the President personally.

Although SESPAS is the major public provider of health services, in recent years the Secretariat of the Presidency has become a significant source of health financing, especially for the purchase of plant, equipment, and supplies for SESPAS facilities. In 1991, for instance, the Secretariat of the Presidency was the source of 38% of public expenditures on health (IDB 1997). An unpublished study on the health sector found that SESPAS decisions on even micro-level budgeting and personnel issues lay with the President of the Republic (Perez Uribe et al. 1974). In June 1996, the Dominican Republic held democratic elections which resulted in the election of Leonel Fernández, a young US-educated lawyer.

In contrast to the longevity of the Presidency, other political leaders have a short duration in office. Few political appointees are able to acquire effective capacity to manage the technical or organizational challenges of their policy domain. Between 1930 and 1974, 37 people served as Secretary of Health. A similar turnover has affected the directorship of the IDSS: 21 vice ministers in the past two years. This lack of continuing leadership has left the poorly paid but stable bureaucracy in charge of the health system. The bureaucracy, however, is also very conservative, not well trained, accustomed to certain privileges (to offset the low salary) and fearful for their jobs. In this sense, any change in the system that could increase the degree of formal control or the grade of institutionalized procedures implies a significant reduction in the discretionary power of the bureaucracy. The bureaucracy, therefore, has tended to oppose reform in principle and in practice.

Analysis of the 1995 OCT reform proposal

This section analyzes the political circumstances around health sector reform using the PolicyMaker method. The analysis uses the OCT ‘white paper’ of July 1995 as the reform proposal, and considers the OCT its primary client. Two major objectives are: (1) to assess the political feasibility of the reform proposal, as of mid-1995, and (2) to propose strategies that could enhance the political feasibility of the reform process. Before designing strategies, PolicyMaker analyzes policies along three dimensions: policy content, players, and environment (opportunities and obstacles). These three dimensions frequently intersect. A player’s position may emerge out of a complex combination of its reactions to the policy content, the player’s interests, relative power, and relationships with other policy actors, and the internal and external organizational environment.

For this case study, we first review the content of the reform policy under consideration. Second, we analyze the players, by exploring the interests, power, and position of the dominant policy players, with reference to relevant aspects of the reform proposal. Third, we review the external opportunities and obstacles that the OCT faced in the policy environment. Finally, we present the strategies that were designed in the Dominican Republic, using the PolicyMaker method, for OCT to consider in managing the reform process.

(1) Policy content

Policy proposals for health sector reforms supported by the multilateral development banks are similar across Latin America, responding to similar challenges within public health bureaucracies. At the time of the analysis, proposals followed the ideas presented in the 1993 World Development Report, and built on the World Bank’s seminal 1987 policy study, Financing Health Services in Developing Countries (Akin et al. 1987). The reforms have usually included three levels of policy goals and mechanisms.

First, the reforms define broad governing principles. In the Dominican Republic, the principles were universal access, equity, solidarity, quality, freedom of choice, efficiency, efficacy, and transparency.

Second, strategic guidelines are developed that set out more specific parameters for a restructured health system. In the Dominican Republic, these guidelines included: (1) the design of a single system, organized functionally (regulation, financing, policy, provision); (2) a shift towards preventive services; (3) a strengthened regulatory role of the state; (4)
increased financing for the health system; (5) guaranteed benefits for affiliates; (6) efficient systems; and, finally, (7) the facilitation of social participation in the health system (OCT 1995a). These strategic guidelines represent policy goals, but they do not specify how to achieve the goals, which may have contradictory objectives.

The third level provides more specific policy mechanisms. In the Dominican Republic, policy mechanisms were defined in four areas, according to the OCT in 1995. Similar proposals can be found in other Latin American countries undergoing health reform:

1. development of a new model of rationally determined, publicly financed health services that would ensure a basic basket of cost-effective interventions, namely preventive services, available to the entire population;
2. decentralization and restructuring of the ministry of health and the social security institute;
3. transformation of the state’s role from direct service provider to financier and regulator; and,
4. creation of managed competition through government contracting with both public and private sector providers.

(2) Players
Assessment of political feasibility requires an analysis of the stakeholders – the political actors affected by or affecting a given policy. These actors are called the ‘players’ in Policy-Maker. The field of policy analysis has not produced a single or simple method for assessing the characteristics of players involved in policy change (Reich 1996). PolicyMaker, therefore, combines a number of analytical methods. The basic analysis requires an assessment of each player’s position on the policy (support, opposition, or non-mobilized position), power (resources available to use in the policy debate), and intensity of position (high, medium, or low, depending on the willingness to use available resources in the policy debate). In this analysis, a player can be either an organization or an individual, though the analyst might consider weighting these groups differently, according to their power resources.

In our analysis of health reform in the Dominican Republic, the players were divided into five key groups: public sector, private sector, unions, political parties, and other nongovernmental organizations.

Public sector: SESPAS and IDSS
The reform proposal has profound implications for the public sector, especially the Ministry of Health (SESPAS) and the Dominican Social Security Institute (IDSS). Political resistance in the public sector was anticipated particularly around the issues of hospital autonomy and institutional restructuring.

A 1985 evaluation of SESPAS described it as a government agency suffering from ‘overall inoperativeness’. SESPAS and IDSS lack the internal structures, formal lines of command, functional definition, administrative machinery and policymaking capacity to effectively execute current mandates or to meet longer-term institutional objectives. Decision-making is usually concentrated in an individual, and accountability is diffuse. An attempt at regionalization of SESPAS failed and local officials lack authority. Services are poor in quality, and coverage is low. Human and material management is deficient. Nearly all appointments are made at the central level by the Minister (or the President) without the knowledge of division chiefs or facility managers. Mismatches result between human resource supply and service demand. For example, several SESPAS facilities have up to 50% more medical personnel than necessary to meet demand, while other facilities are closed due to lack of personnel (IDB 1997).

Considerable confusion exists concerning the role of SESPAS within the sector because the Secretariat of the Presidency administers nearly one-third of government health spending, and little coordination of any kind exists among public sector health institutions. Linkages between the public and private sector are absent. Each institution makes policies, sets plans and implements programmes more or less independently. This, in turn, contributes to stratified access to health care, concentration of resources in large cities, duplication of infrastructure and service provision, and overlapping financial arrangements. For example, household surveys show that 50% of IDSS enrollees do not use IDSS services, while 50% of users of IDSS services are not enrolled in IDSS. In some rural areas, NGOs and SESPAS provide similar services to the same population groups. A significant percentage of the poor bypass ‘free’ SESPAS facilities, seeking care at fee-for-service private clinics.

Hospital autonomy
After the public release of the ‘white paper’ in 1995, the Secretary of Health and the OCT were accused of ‘privatizing’ the health sector. While it is true that the management of publicly owned hospitals through contracts is not privatization, especially since the government would guarantee subsidies for preventive services and basic ambulatory care (F. Rojas 1995), elements of autonomization can have (and can be perceived as having) the same political and social effects as privatization has had on other state industries. That is, hospital autonomization does imply that current government employees become employees working under contract, without a lifetime guarantee, which allows for discretionary firing and a complete break in the traditional relationship between the state and physicians. Hospital autonomization also implies that public sector hospitals would compete with the private sector to provide the basic package of services; that the hospital director would have discretion over budgets, and that the central SESPAS would not; and that any services provided in excess of basic ambulatory care would not be subsidized by the government.

For all these reasons, the SESPAS bureaucracy, though not fully cognizant of the potential implications of the reform, was extremely wary of the proposal. And the AMD was highly opposed to hospital autonomization, due to the loss of job security that physicians would face under this system. Hospital directors, who stand to gain in status and control,
were pleased with the idea, but were not organized. Overall, there were serious concerns about the technical capacity of hospital staffs to manage the process of autonomization and re-orient the hospital to a competitive environment.

**Institutional restructuring**

The processes of institutional restructuring present serious challenges. For the Health Secretary, restructuring could mean political suicide if the AMD were to mobilize against the plan. Any benefits from the policy reform are likely to be long-term and difficult to perceive as tangible. For the bureaucracy, restructuring is feared, because it would disturb the status quo, create a threat to job security, and upset established ways of doing things. For physicians, institutional restructuring places the AMD’s organizational autonomy and negotiating power at stake. For hospitals, it represents a change from the status quo, which is so negative at present, that any change is perceived positively.

IDSS faces many of the same issues. Restructuring for IDSS has similar implications as for SESPAS, but with the added nuance that IDSS would be forced to stop its direct service provision altogether. Under the reform, all financing of health services for formal and informal sector employees would be provided through the IDSS. Many observers outside of IDSS were surprised that IDSS could be considered a responsible controller for funds, given its history of political patronage. Most likely, the reform proposal would be revised to remove IDSS (not government) from the collection and disbursement of funds. However, if this were to occur, then IDSS would have few tasks remaining in health services.

This is not the first attempt to restructure the IDSS. Created in 1948 during a wave of Bismarckian-style social security, the IDSS was primarily a response to pressures from the cane-cutters union. Its political patronage functions have persisted over time. In 1982, the President, three of the major trade unions, and the main employers’ association, with assistance from the International Labor Organization, endorsed a legislative draft to expand IDSS health care coverage to all salaried workers in both the private and public sectors regardless of salary level (removing a cut-off that exempted most white and blue collar workers from obligatory payment). The reform presented a politically viable solution, given the power of the AMD. A last-minute revision of the bill, prepared by a group of civil servants who did not want to be required to pay into IDSS instead of their current private insurers, restricted care to IDSS-owned facilities, which were notorious for poor quality. This revision eliminated free choice to use private facilities, a central element of the bill. The strong opposition of the private sector then defeated the bill in Congress. High-salaried employees, who would have been incorporated into IDSS after the projected elimination of the salary ceiling, also opposed the amendment because they would have been required to pay contributions but did not want to use IDSS services. The bill’s defeat strengthened the private sector and contributed to further erosion of the IDSS public image (Mesa-Lago 1978, 1989, 1992).

In 1994, a private think tank and the association of employers published a plan for health sector reform that proposed the elimination of IDSS. The new IDSS director accepted the proposal, but was fired shortly thereafter. The position of the subsequent directors was not known officially. At the time of analysis (1995–96), IDSS’s technical office questioned the value of contracting and seemed to reject the idea of eliminating its role as a direct provider of health services.

**Transformation of the state's role**

Bank-financed health sector reform is meant to transform the state’s role from direct service provider to financer and regulator, but the details of this transformation are unclear. There is some ambiguity on how the state becomes ‘financer and regulator’. At the time of our interviews in the Dominican Republic in 1995, ‘separation of financing and provision’ was interpreted in the press as the ‘privatization’ of health services provision and created reluctance among political leadership to support health sector reform with enthusiasm: political leaders of SESPAS (SecSal) and IDSS (IDSSDir) were thus classified as high-power actors in low support of the white paper. In the pre-presidential election period (September 1995 to May 1996), this reluctance was expected. In the post-election period, the issues were still unresolved. A distinction was also made between political leadership and SESPAS and IDSS bureaucracies in the analysis, as these groups had contrasting interests in the process. The SESPAS bureaucracy (SESPBur) was considered high-power and low-support at the time of the white paper, while the IDSS bureaucracy (IDSSBur) was medium-power and low-opposition, with potential to move to high opposition in the near future.

**Private sector: private clinics and iguales**

The private sector is highly opposed to regulation, having operated profitably during the progressive decay of public sector services. Approximately 15% of Dominicans, primarily formal sector employees, belong to employer pre-payment plans, known as *iguales médicas*, which cover a basic package of ‘equal’ services. The plans compete on price, service quality, and completeness. In principle, consumers of *igual* health plans would welcome government financing of these services, but would resist any attempt to be incorporated into government-provided services. If formal sector employees were obliged to contribute to the public sector (in order to finance the rest of the health system), then formal sector employers who are not already evading payment would be expected to resist further. This practice (the so-called *doble cotización* or double payment) has been identified as an agenda item for small and large business organizations.

Employer discontent (and evasion), along with the private sector’s resistance to regulation and the formal sector consumer’s aversion to government-related (financed or provided) services, make the decision to move towards a managed competition model difficult for the government. While the private sector is expected to gain under managed competition, the *igual* would probably be more profitable if
they can continue to restrict plan entry to the relatively healthy and wealthy, which would probably occur more easily without reform. Private health sector players (private clinic/íguala owners – PrivClin – and employers – EMPLOYER), while expressing basic agreement with the reform’s principles, were lukewarm towards the white paper, and based on an analysis of player interests were classified as moderately opposed, high-power players.

Unions: the AMD

A key feature of the Dominican health sector is the near-omnipotence of the physicians’ association (AMD). In the past, every negotiation between the government and the AMD has ended with government concessions. As part of this process, the AMD strikes frequently and for long periods of time. In 1996, for example, the AMD held an eight-month strike for higher wages and increased job security. This strike came after an extremely generous settlement, in which the government promised to double all doctors’ salaries in the public sector, waive import taxes on vehicles, and provide public housing. The strike was perhaps precipitated by the government’s inability to finance its health services, much less provide housing to doctors. During this time, the government agreed to pay doctors their salary for the time missed, and still, the AMD remained on strike pending resolution of the ‘situation’ of IDSS doctors. This situation is particularly deplorable since physicians are supposed to work eight hours a day legally, but typically work only two hours a day and spend an average of two minutes per patient (Mesa-Lago 1992). In addition, they are frequently absent, delay hospital dismissals, violate rules, and reject any effort to introduce planning, set work schedules, or enforce the budget (Mesa-Lago 1992).

The AMD is led by an experienced union organizer, and the Secretary of Health, usually inexperienced in negotiation given his short tenure, is the AMD’s primary target. If the Secretary is unable to meet the AMD’s demands, the organization has often been able to pressure the President to remove the Secretary. The AMD is also able to mobilize quickly against journalists and policy-makers who attack their interests publicly. The AMD was considered a high-power actor, highly opposed to the white paper in principle and in practice.

Political parties: Fernández and the PLD

Leonel Fernández, who was elected President as a member of the Partido de Liberación Dominicana (PLD) in 1996, produced an elaborately detailed, Bill Clinton-style governing plan. The plan placed health reform at the bottom of a 24-item list of priorities and left it undefined (Partido de Liberación 1996). During an interview conducted in August 1995 with the current vice-president, Dr Jaime Fernández Mirabal (then a PLD senator), the reform group was advised to stop using ‘economic terminology’ in their proposals and to focus on ‘decentralization issues’, consistent with the democratization rhetoric favoured by the PLD. Leonel Fernández’s position on the AMD strike, which occurred before he took office, was that the President of the Republic should negotiate directly with the head of the AMD, and should continue to make concessions on most issues, rather than delegating this task to the Secretary of Health, thereby undermining the efforts of the Secretary of Health to be firm with the AMD. This position agrees with Dominican political culture, as described earlier, where power is concentrated in the President.

These expressions of position and power do not necessarily indicate that the President is fully opposed to the OCT ‘white paper’. However, they do indicate that he is not supportive, and that he will not serve as an advocate. The Secretary of Health, who was replaced in January 1997, could be an important factor in the reform process. Thus far, however, the Secretary has been remarkably uninvolved in planning for reform. The passivity of Balaguer’s last Secretary of Health could be linked to a protracted ‘lame duck’ period prior to the elections. In the case of the new government, the Secretary’s tepid support is notable and could have significant consequences for feasibility. The President (PRES) at the time of analysis was classified as high-power with a non-mobilized position. The PLD, currently in office, was classified as a high-power, low-support player.

Non-governmental organizations (NGOs)

While NGOs were expected to be supportive of reform plans to expand coverage to the entire population and provide more preventive services, the interviews did not find much support for reform among NGOs. NGOs initially focused attention on the creation of a basic package of services using cost-effectiveness criteria. NGOs focusing on preventive care services felt that many elements of equity were not well served by an application of cost-effectiveness criteria, which were not connected to a concept of health as a right. NGO staff published press articles criticizing the OCT for using ‘economic’ criteria where they ‘don’t belong’, that is, in the health sector (O. Rojas 1995a, 1995b). This criticism had the potential of associating reform with particular ‘victims’, such as children who would not receive emergency interventions that fall outside of the basic package. Other groups, which provided specialized forms of care and received government monies, such as the Asociación Dominicana de Rehabilitación or the Liga Dominicana Contra el Cáncer, feared that reform would decrease resources available to their work. While NGOs are generally not very influential on the national political scene in the Dominican Republic, they have sufficient resources to access the media, to shape public perceptions of health reform, and thereby to influence the reform process in the CNS. NGOs were classified as low-power, low-opposition players.

At the time of our analysis (July–November 1995), most political players were essentially non-mobilized with regard to the health reform proposal (the National Health Commission – CNS; beneficiaries – BENEFIS; the press – PRESS; universities – UNIV; and the Church – CHURCH), although many players’ interests clearly conflicted with the white paper. Even when players expressed nominal support (such as the Secretary of Health), the interviews suggested that most players preferred to wait for completion of the studies and proposals before taking a position. This lack of involvement forced the
OCT and the Banks to become the main advocates for health reform, a politically problematic situation. (See Figure 1 for a position map for the major players in the Dominican health reform.)

(3) Opportunities and obstacles

The PolicyMaker analysis also produces a systematic assessment of opportunities and obstacles to the policy change under consideration. As many of the obstacles were discussed above, this section focuses on the opportunities. An important opportunity lay with the OCT, which had ample financial resources from international agencies, relative independence from other health sector players, excellent technical staff, and a vision of how health reform could work. These strengths created a good negotiating position for the OCT within the health sector and civil society. The small staff, however, limited the OCT’s ability to respond quickly to political challenges in the media and the health sector. The reform process was just beginning, which gave the OCT substantial flexibility in planning.

In the larger political environment, there was broad consensus that the Dominican public health system suffered from multiple problems and needed serious improvement. This realization was occurring at the same time as the Dominican Republic approached its historic transition to democracy and the country’s first democratic elections. The pre-electoral environment in late 1995 and early 1996 limited the OCT’s ability to respond quickly to political challenges in the media and the health sector. The reform process was just beginning, which gave the OCT substantial flexibility in planning.

Facing competing priorities and upcoming elections, the OCT executed a selection of the strategies in Table 1. The OCT created common ground and vision (strategies 1 and 2) through the official debate and publication of the white paper by the CNS. An indicator of this success was the subsequent publication of institution-specific (SESPAS and IDSS) reform proposals that differed minimally from the original white paper (strategy 8). The mobilization and preparation of key actors was limited by the pre-electoral environment (strategy 4); however, the passive role of the Secretary of Health during this period seemed to activate debate within the CNS. Contrary to expectations during the analysis about the ineffectiveness of external commissions, the CNS provided an excellent sector-wide forum for discussion (strategy 10, 11). But the decision-making processes in the CNS were never fully defined (strategy 3), and its existence depended on a presidential decree issued under Balaguer. Consequently, the CNS did not survive under the new Administration.

(4) Strategies

PolicyMaker provides a tool box of 31 basic political strategies for enhancing the feasibility of policy reform and a matrix for defining strategy actions and associated risks, problems, and benefits. Strategies are usually designed with the client’s full collaboration, to assure that the proposed strategies are relevant and realistic under the time and resource constraints. Table 1 provides a summary of the strategy design exercise for health reform in the Dominican Republic.

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Pilot projects (strategy 5) in hospital autonomy were initiated during the pre-electoral period as planned, but the demonstration effects of the studies were limited due to the OCT’s weakening relationships with the new Administration, especially with the new leadership in SESPAS. Subsequently, key technical staff in the OCT and in the Secretariat of the Presidency were replaced, reducing the feasibility of reform proposals as originally conceived. The limited political support of the new Administration for health reform showed the OCT’s mixed success in working with political parties (strategy 6). A communications strategy (strategy 7) was launched with success; the debate in the press became more accurate over time, and the OCT was able to respond to editorials and attacks in a timely manner. Alliances with international agencies were strengthened during the design phase through the creation of working groups on specific themes such as human resources (strategy 9, 11).

Overall, the PolicyMaker exercise produced a set of strategies that achieved some success for the OCT, especially with regard to common ground, vision, and work with the SESPAS and IDSS bureaucracies. However, relationships with key political actors were particularly precarious in the post-election period, and presented an insurmountable challenge to...
reformers. This exercise in systematic applied political analysis helped move the health reform process forward in the Dominican Republic, but did not result in full adoption of the health reform package. In short, applied political analysis may be necessary to promote WDR-style health reform efforts, but analysis alone is not sufficient for success, for reasons discussed below. In late 1997, the OCT repeated the PolicyMaker analysis, updating the position maps and setting out modified strategies. Whether this additional analysis will provide sufficient guidance to produce political and social acceptance of health reform in the Dominican Republic in the near future is an open question.

Conclusions
This analysis of the political dimensions of health sector reform processes in the Dominican Republic suggests some generalizations that may be relevant to other nations. Six factors seemed to affect the pace and feasibility of the health sector reform proposal in the country in 1995.

Factor 1: The leadership of the reform
The leadership vacuum in the Dominican Republic in 1995 made decision-making on health reform difficult and incremental at best. The Secretary, facing the progressive decay of institutions and the near certain loss of his party in the coming elections, was unwilling to tackle health system change. Comprehensive health sector reform usually requires the full commitment of the Secretary of Health. In the Dominican Republic and elsewhere, leadership capacity is deeply affected by the system of government (new democracy versus aging dictatorship), the credibility of the government, political timing (the approach of elections), and the political effects of the technical content of reforms.

If the political leadership is inactive on health sector reform, the technical reform group and the Banks themselves become the policy advocates. To play this role effectively, leadership and resources are required within the reform group. The reform group must receive technical, strategic, and political support, above and beyond the standard studies conducted under Bank pre-loan processes. In a personalized political system in which decision-making is highly centralized, the reform group must create a critical mass of reform supporters, who can promote reform despite a turnover of leaders. Reform groups may need to create incentives for the Minister to become a fully engaged advocate for reform. Politicians need to find ways to navigate the political costs and benefits of health reform, through a combination of short-term gains and a supportive environment. In situations of uncertain political leadership, as shown by the case of the Dominican Republic, the prospects of health reform are greatly handicapped.

Factor 2: The political strategies adopted by the reform group
Health sector reform confronts a collective action dilemma: the small and delayed benefits for many people who are highly dispersed (and politically weak) are perceived as less important than the high and immediate costs felt by small groups that are highly concentrated (and politically strong). Explicit political strategies are needed to manage this distribution of the political costs and benefits of reform, especially in relation to key interest groups (the medical association and health workers’ union), the government bureaucracy, and international agencies. Reformers need short-term concrete gains that can satisfy key constituents, especially if the expected benefits of reform are perceived as long-term, uncertain, or intangible. In short, reform advocates require political strategies to manage the perceived interests of key stakeholders. If there is a political leadership vacuum, then reform groups need substantial human and financial resources to plan for these non-technical dimensions of the reform process. Applied political analysis can assist the process of generating strategies for promoting reform, but analysis must be supported with the skills and resources for on-going consultation and negotiation with major stakeholders.

Factor 3: The location of the reform group
A structural dilemma exists in the organizational location of the reform group, reflecting a general dilemma about the location of advisory or policy analysis groups. A location within the agency can restrain the group’s autonomy and ability to question basic assumptions of the leadership, making the advice serve the preconceptions of the leadership. On the other hand, a location outside the agency can produce weak links to decision-makers with a tendency to marginalization and irrelevance, while allowing the reform group more autonomy and capacity for independent analysis. At the time of this analysis, the OCT was located outside SESPAS and was seen as an outsider by the Health Secretariat’s bureaucracy. This allowed critics of health reform to link the OCT symbolically with the development banks, and helped weaken the OCT’s political legitimacy. After the election, the OCT was brought into SESPAS, only to be separated again several months later.

Factor 4: The ownership of the reform
For health reform to be adopted, the reform package needs to have strong ownership, usually by the Minister and by the government. But a dilemma also exists with ownership. If a reform is closely associated with a government, and the government changes, then a common political response of the new regime is to reject or reverse the reforms. The new government needs its own reforms, with material and symbolic benefits, and also needs to distinguish itself from previous power-holders.

The dilemma is this: an effort to raise ownership above the current government-in-power (through a multi-partisan commission, for example) may successfully diffuse ownership, but this process could lower the probability of achieving successful acceptance and implementation. Minister-driven reform can tie the change closely to one person and thereby raise the chances of adoption now and reversal later; but if not tied closely, then the reform may not happen at all. The goal is to create a reform with sufficient ownership by the current power-holders that it is likely to be accepted, and without so
much ownership that the next government will reject the reform and seek its own. Achieving this goal requires the creation of strong constituencies, within the bureaucracy and among interest groups, to mobilize supporters who will have an interest in continuing the reform and who will persist beyond changes in government.

In the Dominican Republic in 1995, prior to elections, the potential political owner of health reform had little chance of continuing in office, and therefore no effort was made to mobilize high-level political support for the reform. The Dominican Republic’s approach of technical studies plus wait-and-see was effective in preserving some elements of the OCT after the election. But this strategy also reduced the probability that the reform proposals emerging from the study period would be adopted and owned by the new administration.

**Factor 5: The political language of reform**

Reform efforts often require new ideas that can change the political landscape, provide new perspectives on old problems, and create alliances among diverging groups. The political language of reform can create legitimacy by connecting the reform to international sources and the experiences of other countries. The promotion of ‘equity and efficiency in health systems’ is hard to oppose. Poor choices of political language can undermine efforts at reform. As shown in the Dominican Republic, an association with the word ‘privatization’, regardless of its technical accuracy, can undermine support for a reform effort and can put reformers in a defensive mode that is difficult to overcome.

**Factor 6: The political timing of reform**

The feasibility of health sector reform is often affected by political timing; whether a government is recently elected or is approaching the end of its term will affect its political capital and its willingness to take political risks. The approach of elections can complicate strategies to create political circumstances that would support reform. If the current government is unlikely to stay in power, or if the current Minister is unlikely to stay in power, then the power-holders may have limited political resources and limited interest in attempting a reform that entails high political costs.

The process of health sector reform involves a continual tension between the technical and political dimensions. Often, the proposed technical solutions are only partially constructed, with large ambiguities remaining in the institutions required and the implementation methods. The reform group may be highly qualified in a technical sense and acutely aware of the political implications of different reform options, but may be unprepared for analyzing and managing the highly political dimensions of the reform process. Applied political analysis can be helpful in organizing political data in a systematic way, in analyzing the political risks of health sector reform, and in constructing and selecting political strategies to manage the multiple players involved.

The case of health sector reform in the Dominican Republic shows that the WDR-style reform package creates multiple political challenges that are of significant size. These challenges require political leadership that is committed to reform and prepared to expend political capital, and political strategies that can manage the political costs of powerful stakeholders associated with the reform. The experience in the Dominican Republic suggests that applied political analysis can help identify strategic options, which may enhance the prospects for health reform. But the experience also demonstrates that analysis must be accompanied by an adept use of political power; otherwise the reform package is likely to languish as technically desirable but politically infeasible.

**Endnotes**

1 Governments usually started adjustment with the tacit consent of the population, having been put into office to ‘reverse economic collapse’ (Lindenberg and Ramirez 1989). Health sector reform has not enjoyed such a mandate in Latin America.

2 More than 70% of public (SESPAS, IDSS, Secretariat of the Presidency) spending on health is directed to hospital care (IDB 1997).

3 In the most recent OCT document, money management would be the responsibility of the Central Bank.

4 While politically powerful, it is interesting to note that the 1996 eight-month AMD strike, which resulted in the total shut down of public services, evoked little interest from the public. Private sector services seem to have absorbed most clients willing to pay. In fact, health indicators (infant mortality) actually improved during this same time period.

**References**


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Pathways to malaria persistence in remote central Vietnam: a mixed-method study of health care and the community

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Abstract

Background: There is increasing interest in underlying socio-cultural, economic, environmental and health-system influences on the persistence of malaria. Vietnam is a Mekong regional 'success story' after dramatic declines in malaria incidence following introduction of a national control program providing free bed-nets, diagnosis and treatment. Malaria has largely retreated to pockets near international borders in central Vietnam, where it remains a burden particularly among impoverished ethnic minorities. In these areas commune and village health workers are lynchpins of the program. This study in the central province of Quang Tri aimed to contribute to more effective malaria control in Vietnam by documenting the non-biological pathways to malaria persistence in two districts.

Methods: Multiple and mixed (qualitative and quantitative) methods were used. The formative stage comprised community meetings, observation of bed-net use, and focus group discussions and semi-structured interviews with health managers, providers and community. Formative results were used to guide development of tools for the assessment stage, which included a provider quiz, structured surveys with 160 community members and 16 village health workers, and quality check of microscopy facilities and health records at district and commune levels. Descriptive statistics and chi-square analysis were used for quantitative data.

Results: The study's key findings were the inadequacy of bed-nets (only 45% of households were fully covered) and sub-optimal diagnosis and treatment at local levels. Bed-net insufficiencies were exacerbated by customary sleeping patterns and population mobility. While care at district level seemed good, about a third of patients reportedly self-discharged early and many were lost to follow-up. Commune and village data suggested that approximately half of febrile patients were treated presumptively, and 10 village health workers did not carry artesunate to treat the potentially deadly and common P. falciparum malaria. Some staff lacked diagnostic skills, time for duties, and quality microscopy equipment. A few gaps were found in community knowledge and reported behaviours.

Conclusion: Malaria control cannot be achieved through community education alone in this region. Whilst appropriate awareness-raising is needed, it is most urgent to address weaknesses at systems level, including bed-net distribution, health provider staffing and skills, as well as equipment and supplies.
Background

Malaria remains a major global threat and its control is one of the Millennium Development Goals. Anti-malarial drug resistance, linked to both unnecessary and inadequate drug intake, creates risks for malaria resurgence, and is a major challenge for malaria control [1]. Insecticide-treated bed-nets and effective anti-malarial drug combinations are essential components of control programs [2,3]. However, effective control requires consistent action from both health systems and community, and an understanding of features that precipitate risk, such as development projects bringing labourers through forested areas [4]. The broad social (i.e. non-biological) aspects of control are thus critical to success [5].

Overextension or poor training of health staff can undermine diagnosis and treatment, while bed-net distribution requires reliable systems that are difficult for impoverished, isolated settings. Patients may not seek care if they lack knowledge or money for treatment or transportation, or may seek care from multiple sources [6-8,3], making implementation of treatment guidelines – and health information systems – problematic [9].

Vietnam is considered a Mekong region malaria ‘success story’ after the introduction of a National Malaria Control Program (NMCP) in 1991 to address a spike in cases and increasingly widespread drug resistance. The NMCP provided free anti-malarials (especially artemisinin to treat P. falciparum, Vietnam’s most prevalent – and most deadly if untreated – strain, impregnated bed-nets, twice-yearly home insecticide spraying, and early diagnosis and treatment. Declines from 1.2 million clinical cases (without confirmed blood tests) and 4646 recorded deaths in 1991, to 185 529 clinical cases and 50 deaths in 2002, are attributed to the program [9-12]. Managed by the National Institute for Malariology, Parasitology and Entomology (NIMPE), the NMCP relies on vertical and horizontal collaborations from central to village level.

By 2000 malaria had largely retreated to 84 districts in 15 (out of 61) provinces, with an estimated population of 7.2 million (vs 83 million nationwide). Over 90% of severe cases and deaths occurred in mountainous, forested and largely ethnic minority areas of central Vietnam [9,12], often along international borders, where the common mosquito vectors that transmit malaria, Anopheles dirus and An minimus, are plentiful [13]. These ethnic minorities tend to be impoverished, poorly educated, culturally and linguistically distinct, and living in dispersed, less accessible settlements; such areas ‘represent a real challenge for the NMCP’ [9] (p.217). Therefore, it is both instructive and viable to persistent malaria in such settings.

In 2002–03 the central province of Quang Tri was among Vietnam’s highest malaria burden provinces with 4178 cases (confirmed and clinical). Over 9% of Quang Tri’s approximately 573 000 inhabitants are ethnic minorities, overwhelmingly Van Kieu and Paco [14], who live astride the border with Lao PDR in districts with rugged, lush terrain, frequent rainfall, and large infrastructure projects within forests (including a bridge and road along the old Ho Chi Minh Trail). These contextual aspects, together with poverty, low education levels, cross-border mobility, and cultural diversity, made this an appropriate study site for malaria social science research.

This paper reports on a collaborative study aiming to contribute to malaria control in Vietnam by documenting the non-biological pathways to malaria persistence in two districts. The objectives were to identify the role and nature of health system and community factors directly linked to malaria persistence, and underlying influences that help explain the direct factors. The study was undertaken by Vietnamese and Australian researchers from March 2004 to April 2005.

Methods

In order to meet the study objectives we chose a flexible study design with multiple methods (both qualitative and quantitative). Mixed-method approaches permit exploration of complex interrelationships between actors and systems, and have been used for malaria social research [15,16,5]. Data were collected in two stages. The formative stage used mainly qualitative tools to help define and expand thematic areas of enquiry; these data were rapidly reviewed to inform the (mainly quantitative) tools used for the assessment stage. An overview of methods and samples appears in Table 1. NIMPE investigators were trained by Australian colleagues and collected all data during 3 field visits.

Choice of Study Sites

Among Quang Tri’s 8 districts, two (hereafter, A and B) were selected for their greater malaria caseload and proximity to the Lao border. At the 1999 census, district A’s population was 54 547 and B’s was 27 000; the vast majority were Van Kieu and Paco. For the formative stage we chose 3 border communes per district.

For the assessment phase we used 2 of these communes per district (i.e. total 4 communes) in order to ensure sufficient sample recruitment within the timeframe in view of the low population density and transportation difficulties. From each commune’s approx 10 villages we selected 4 with varying ease of access as well as distance from the commune health station (i.e. total 16 villages).

Development and Use of Instruments, Sampling and Ethics

In the formative stage we held community meetings with district stakeholders to establish rapport and elicit local information and views. Semi-Structured Interviews (SSIs)
and Focus Group Discussions (FGDs) using flexible guides were held to explore beliefs, attitudes, awareness, care seeking/providing and circumstances relevant to malaria exposure and control with all provincial and district MC managers and Commune Health Stations (CHS) staff, a convenience sample of VHWs, and community members (village heads and adult men and women, recruited purposively).

For the assessment stage we developed and administered face-to-face structured knowledge, attitudes and practices (KAP) surveys in the 16 villages, one with every Village Health Workers (VHW).
Health Worker (VHW) (n = 16) and another with 10 community members per village (n = 160), respectively. The community sample size was determined on the basis of time, resources and feasibility, along with power to conduct tests of significance on some demographic variables. Sampling was undertaken randomly from village household lists, stratified for equal numbers of men and women aged 18–48. Van Kieu interpreters (one male and one female) were used for nearly all community surveys after training by NIMPE researchers. We also devised observation check-lists to assess visibility and currency of malaria treatment guidelines, quality of CHS microscopy, and bed-net quality during KAP survey home visits. Actual bed-net use was determined by unannounced night visits to 55 homes in 2 communes. To obtain an impression of provider knowledge and guidelines adherence, we quizzed (11 open questions) district hospital (DH) staff involved in malaria control and available on the day, and reviewed one month of patient records from both DHs and 3 months of treatment logs from all 4 CHSs; comprehensive malaria case record numbers for the first 9 months of the year were collated from one DH and one CHS.

Potential participants were assured that participation was voluntary and confidential and refusal would have no negative consequences. As is common in Vietnam, all agreed to participate; verbal informed consent was taken. Participants were given a t-shirt with a malaria control message in appreciation. The study was approved by NIMPE’s Human Research Ethics Committee for Medical-Biological Research, and the University of Melbourne’s Human Research Ethics Committee. Instruments were developed in English, translated into Vietnamese (and back-translated) and pre-tested with a convenience sample in the study area.

Data Management and Analysis
Notes were taken during SSIs and FGDs; transcripts were not prepared due to time constraints. Researchers reviewed the formative data to finalise the assessment stage tools. Check-list data, health record reviews and quiz results were collated. KAP survey data were analysed using Stata v8.0 (descriptive statistics and chi square tests), and community level differences calculated for location, sex and education. Interpretation of findings was iterative and involved all data sources and researchers; together we distilled a subset of triangulated findings that offered a coherent picture of the interplay between direct and underlying influences on persistent malaria.

Results
Provincial records showed a continued high malaria burden in Quang Tri in 2004, with a total of 3958 cases (both clinical and slide-confirmed), a slight decline from 2003 (4178). District A recorded 2131 cases (vs 2246 in 2003) and District B 608 cases (vs 571 in 2003). Below we present evidence of direct and underlying influences on malaria persistence in both districts at health system levels (district, commune, village) and community level, in turn.

District hospital level: satisfactory standards of malaria care but early discharge for some patients
Record review from the first 9 months of the year showed that DH-A treated 433 malaria cases. Review of a total of 88 patient cards from the two DHs showed close adherence to the most recent national malaria guidelines [17]. Just 3 patients were treated for malaria despite having a parasite-negative slide. Most DH malaria control staff were trained in the guidelines and generally knowledgeable. Of the 11 questions, the 8 staff at DH-A correctly answered all but 3, with 1–3 staff incorrect on each. Of the 6 DH-B respondents, all got 5 questions correct, with one wrong answer apiece for the remaining 6 questions. Microscopes were in good condition, microscopists had specialist training, and results were reportedly usually available within 30 minutes. There was one notable problem noted by DH staff during a community meeting: about one-third of inpatients discharged themselves prior to completion of treatment. Staff attributed this to inability to afford ‘extra’ charges for in-patient care, e.g. antibiotics and vitamins. Many were lost to follow-up, making it impossible to verify their adherence or recovery. However, most patients presented first to lower levels (though some were referred to DHs). At their last bout of malaria, 38% of community members reported they sought care from the VHW and 60% from the CHS; just 10% travelled to the DH (>one answer possible).

Commune Health Stations: deficiencies linked to resources
Each commune in Vietnam has a health station in a fixed facility serving the commune’s villages. National policy states CHSs should have at least 4 staff, including a fully-qualified doctor, nurses and/or midwives, and should implement all basic preventive and curative care under DH direction. Just 2 of our 4 communes had the full staff complement, but also had larger populations than usual. The others had 3 staff, though some were not qualified to offer routine services.

Checks found deficiencies at most CHSs in malaria diagnosis, treatment and microscopy. During FGDs and individual interviews, staff at all 4 communes acknowledged that presumptive treatment frequently occurred. A detailed record review for the first 9 months of 2004 was undertaken in one CHS (pomp 2618) in District A; staff treated 100 parasite-positive and 82 ‘clinical’ cases (unconfirmed by microscopy and diagnosed by symptoms). Thus nearly half of all cases (i.e. 82/182) were
treated presumptively. Review of the past 3 months of logs in all 4 CHSs showed that in 2 communes, staff gave appropriate treatment per guidelines. In the other 2, staff sometimes gave CV8 for *P. vivax* cases (when chloroquine temporarily ran out) and primaquine + artesunate for clinical cases; moreover, workers at these CHSs did not recognise these treatments were contrary to guidelines. Laminated treatment guidelines intended for display to facilitate their use were locked out of sight in 3 of the 4 CHSs.

Although CHS staff discharged patients with instructions to report to their VHW during treatment, staff (at both levels) said patients often failed to do so, making it impossible to monitor adherence to treatment and course of illness, both of which are important for effective malaria control at the population level.

Several underlying influences apparently contributed to CHS-level weaknesses, including deficiencies in human resources, training, equipment and supply, all exacerbated by geographic isolation. In SSIs and FGDs most CHS staff said they found it difficult to accomplish their duties given current staffing levels. Understaffing placed particular pressures on microscopy services. Blood films would arrive haphazardly via VHWs or outpatient CHS services. Slides should be prepared and read immediately, which takes 30–45 minutes, but this rarely happened because of competing tasks, e.g. queues of infants awaiting immunisation, disease outbreaks, meetings with district health staff, or absence of the microscopist. For each slide the microscopist is paid an ‘incentive’ of just 300 dong (about USD two cents), which is low even by local standards. This situation may help explain why staff frequently prescribed anti-malarials according to symptoms, rather than after microscopic confirmation, as is preferred. For quality assurance, district staff periodically collected slides for review at the provincial capital; the percentage of incorrect readings was reported back to the district, and thence to the provincial DH. Staff who was designated for this role but undertook the microscopist for each CHS, most CHSs relied on one of their staff who was designated for this role but undertook the usual CHS workload, and typically had just a week of training. Few had in-service training. As well, quality was undermined by ageing microscopes, lack of stain solution in one commune, improper storage of materials in another, and inadequate pure water and filtering equipment in several.

The geographic features that make malaria viable in this region, coupled with low population density, present great challenges for its control. Poor roads, many waterways, steep ravines and a dearth of telephones hinder communications and transportation. Home visits, referrals and patient follow-up were particularly difficult, especially considering understaffing and (at the time of the study) lack of telephones in some CHSs, leading at times to local management of severe cases who would have been referred to the DH.

**Poorly trained Village Health Workers and lack of appropriate drugs**

Among the 16 VHWs surveyed, most (14) were men, 12 were Van Kieu, 3 were Kinh (ethnic Vietnamese), and one Kazo. Median age was 31 years (range: 21–45 years). All had regular occupations as farmers (14) or traders (2). The 2 female VHWs had the highest education (10–12 years), 10 of the men had 6–9 years, and the other 4 had the minimum required (5 years) for VHWs. Median length of service was 5 years (range: 7 months–15 years).

The VHW (one per village) is a volunteer working across all primary health care programs following very basic training. For MC alone, VHWs are expected to prepare blood films, make referrals for severe cases, treat with (free) anti-malarials, educate the community, manage cases discharged from higher levels, and assist with spraying and net impregnation. The study found that some VHWs lacked confidence in their clinical MC duties (see Table 2).

KAP analysis revealed that 11/16 VHWs prepared blood films, but only 6 delivered these the same day to the CHS, with 4 waiting >72 hours. Ten said they ‘rarely or never’ stayed to obtain results; only parasite positive results were reported back to them from the CHS, often after a few more days. Most (11/16) commenced treatment without microscopic-confirmed diagnosis, prescribing partly by symptoms, and partly by the type of drug currently on hand within their kits. In 10 villages VHWs did not carry artesunate, the recommended drug of choice for *P. falciparum* malaria at the time of the study (see Table 3).

Of the 6 who carried artesunate, all believed it was appropriate for ‘serious’ malaria cases. The main indication for chloroquine offered by the 14 who carried it was ‘light’ fever, not its usefulness for *P. vivax* malaria. Hence, use of anti-malarials for non-malarial fever may have occurred. Despite the fact that 12 VHWs reported confidence in case management, 8 admitted they never followed up.

Triangulation of data sets suggests that VHW weaknesses in malaria management were attributable to a number of underlying influences, including insufficient time to complete duties outside normal working hours, inadequacies in pre- and in-service training and some delays in rolling out the new guidelines for drugs in VHW kits.
In Vietnam, individuals often become VHWs out of civic duty or the appeal of further education and occasional – if small – incentives for particular health care tasks. Apart from their MC duties, VHWs must keep abreast of changing, relatively complex, treatment guidelines. This is daunting for volunteers with low education levels residing in remote locations. When asked to name the role’s disadvantages, our sample mentioned low remuneration, lack of time, and difficulties with transportation and distance, all of which could undermine case identification and management. About one-third felt frustrated by the villagers’ ‘refusal to take advice’.

Although policy dictates that each VHW is trained pre-service for at least three months, just 4 (one-quarter) had such training; 3 had 12–45 days, 6 had 1–5 days, and 3 reported no training. Only 5 reported training during 2004, although provincial policy requires annual refresher training. Only 12 VHWs knew about the new guidelines and 10 carried the new treatment table. Most, however, knew correct dosage for the drugs they carried.

At the time of the study NIMPE was disseminating new diagnosis and treatment guidelines, which include some devolution of decision-making on local treatment to provincial MC managers. Some confusion appeared to persist during this transition, because informants at various levels provided inconsistent information about policy for anti-malarials in VHW drug kits, and a range of explanations for what was actually in the kits.

The terrain and isolation that hinder optimal care by CHSs act as greater barriers for the VHW MC role, because VHWs typically have even less access to reliable transportation. It takes time, effort and – at the least – opportunity costs for these part-time volunteers to remain in close touch with higher health system levels, to follow up or to refer patients. These circumstances presented ongoing risks that some seriously ill patients would be treated in the village, possibly with a less effective anti-malarial.

### Community level: sub-optimal prevention linked to insufficient bed-nets and socio-cultural context

Demographic information from the community KAP appears in Table 4. Most were Van Kieu, and education levels were low, with females more likely to be unschooled ($\chi^2 = 28.22, p = 0.01$). Median household size was 6 persons (range 2–13 persons). Sixty percent had a ‘Poor Card’, which denotes low-income status and enables free medical care and basic drugs. Most (66%) survey respondents reported having had malaria, including about one-third at least once in 2004.

Our findings suggest the direct risks operating at community level were sub-optimal bed-net use and early self-discharge from care. The national MC program calculates net sufficiency on a ratio of one net per two people, with a target of consistent use by at least 80% of the population in endemic areas. Quang Tri health staff at all levels believed this target was not met in the study communes, a view based on irregular day-time spot checking by provincial and district survey teams. We undertook our estimates differently, i.e. by observation during unannounced night-time visits, coupled with survey questions on bed-net use. Night visits to 55 homes in two communes found no nets were used in 20% of households and some nets did not reach the floor or were used as blankets. The 160 survey respondents, however, reported very high usage: 145 (92%) claimed to have slept under a net on the previous night, and 136 (86%) said that all family members had done so, whether singly or (more frequently) sharing. Respondents cited adolescents and the elderly as less likely to use and/or share nets, with just 50% of teenagers consistently using, among whom 70% shared. Whilst 16% of respondents claimed to travel occasionally or often into Laos, and about half went into forests at varying frequency, just a handful carried bed-nets on overnight trips.

While 66 (41%) sometimes ($n = 58$) or always ($n = 8$) consulted traditional healers for ‘health problems’, the

### Table 2: VHW self-reported confidence in aspects of malaria control role

<table>
<thead>
<tr>
<th>Activity</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnose malaria through symptoms</td>
<td>10 (66)</td>
</tr>
<tr>
<td>Take a blood sample from patients</td>
<td>9 (60)</td>
</tr>
<tr>
<td>Make a blood film for microscopy</td>
<td>9 (60)</td>
</tr>
<tr>
<td>Give correct anti-malarial medication</td>
<td>12 (80)</td>
</tr>
<tr>
<td>Adequately manage malaria cases</td>
<td>13 (81)</td>
</tr>
<tr>
<td>Undertake malaria information-education-communication activities</td>
<td>16 (100)</td>
</tr>
</tbody>
</table>

* missing data

### Table 3: Number of VHWs carrying different types of anti-malarial drugs

<table>
<thead>
<tr>
<th>Type of Drug</th>
<th>n = 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloroquine</td>
<td>8</td>
</tr>
<tr>
<td>Artesunate</td>
<td>0</td>
</tr>
<tr>
<td>Chloroquine &amp; Artesunate</td>
<td>6</td>
</tr>
<tr>
<td>No anti-malarial drugs</td>
<td>2</td>
</tr>
</tbody>
</table>
survey showed high awareness of recommended help-seeking for suspected malaria. Respondents claimed to act accordingly (Table 5), although this could not be verified. Some malaria patients with Poor Cards said they were charged for extras like vitamins at DHs (6/20) and CHSs (12/113), leading some to borrow money or discharge themselves early.

There was considerable evidence that insufficient bed-nets, cultural sleeping norms, low education and poverty acted as underlying influences on sub-optimal community behaviours. Provincial staff told us that Quang Tri had comprehensive bed-net coverage through the NMCP, and MC staff at all levels attributed persistent malaria in Quang Tri mainly to community ‘refusal’ to use bed-nets, arguing the need for more ‘information, education and communication’. While enough nets may have been distributed, our survey respondents reportedly received theirs prior to 2003, and many were no longer intact. Some purchased additional nets, usually cheaper single bed size. Using MC guidelines on bed-net ratios (one net/2 people) and data on household size, we calculated that among the 160 households represented by survey respondents, just 72 (45%) had sufficient nets to cover their needs and 88 (55%) did not. In addition, checks of net quality when conducting the survey found 62% of households had at least one ripped or damaged net. Thus, even if all available nets were used, less than half of all households were fully protected.

Family configuration and cultural sleeping patterns also affected net adequacy. In FGDs we heard that some teenagers refuse to use nets, and that elders (with reportedly high net usage) strongly prefer to sleep alone, thus potentially leaving other family members short. As well, overnight socialising among male neighbours is so normal that Van Kieu houses contain a nominated ‘guest’ space in the living room, but just 19% of respondents had a spare net for guests.

Table 4: Description of the KAP community sample, by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Males n (%)</th>
<th>Females n (%)</th>
<th>Total n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean, range) in years</td>
<td>34, 18-48</td>
<td>30.6, 18-45</td>
<td>32.5, 18-48</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Van Kieu</td>
<td>Kinh (Vietnamese)</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>69 (86)</td>
<td>8 (10)</td>
<td>3 (4)</td>
</tr>
<tr>
<td></td>
<td>71 (89)</td>
<td>9 (11)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>140 (87.5)</td>
<td>17 (10.6)</td>
<td>3 (1.9)</td>
</tr>
<tr>
<td>Education level reached:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No schooling</td>
<td>31 (39)</td>
<td>64 (80)</td>
</tr>
<tr>
<td></td>
<td>Some primary (1–5 years)</td>
<td>27 (34)</td>
<td>4 (5)</td>
</tr>
<tr>
<td></td>
<td>Some secondary (6–9 years)</td>
<td>22 (27)</td>
<td>12 (15)</td>
</tr>
<tr>
<td>Occupation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Farmer</td>
<td>67 (84)</td>
<td>68 (85)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>11 (14)</td>
<td>9 (11)</td>
</tr>
<tr>
<td></td>
<td>missing</td>
<td>2 (2)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Poor Card:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>44 (55)</td>
<td>52 (65)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>35 (44)</td>
<td>27 (34)</td>
</tr>
<tr>
<td></td>
<td>missing</td>
<td>1 (1)</td>
<td>1 (1)</td>
</tr>
</tbody>
</table>

Table 5: Community responses about care-seeking for suspected malaria

<table>
<thead>
<tr>
<th>What to do first for fever or suspected malaria (n = 149*)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do nothing</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Pray</td>
<td>3 (2.0)</td>
</tr>
<tr>
<td>Buy drug in market</td>
<td>4 (2.7)</td>
</tr>
<tr>
<td>Go to Village Health Worker</td>
<td>77 (52)</td>
</tr>
<tr>
<td>Go to Commune Health Station</td>
<td>63 (42)</td>
</tr>
<tr>
<td>Go to District Hospital</td>
<td>1 (0.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How long do you wait before seeking care! (n = 129*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately</td>
</tr>
<tr>
<td>One day</td>
</tr>
<tr>
<td>Two days</td>
</tr>
<tr>
<td>More than two days</td>
</tr>
</tbody>
</table>

* Missing data
A lack of spare nets also contributes to exposure risk during periods of mobility – usually by foot – into Laos, forest or fields for overnight stays. This mobility is culturally and economically driven, as families seek reunions with relatives across the Lao border, and individuals collect forest products for consumption or sale due to lack of employment options.

As Table 6 illustrates, most respondents had basic understanding of malaria symptoms and causation, and knew malaria is curable. However, about one-quarter were unsure about causation and prevention. Among those who said malaria is not preventable, 28 (55%) had no schooling, versus just 5 (18%) with one or more years of schooling ($\chi^2 = 14.33$, $p = 0.001$); this misperception was held by 17.5% of men and 50% of women ($\chi^2 = 6.60$, $p = 0.01$). The lower education levels of women in particular may explain gaps in preventive behaviours.

Ethnic minorities in western Quang Tri have little involvement with mainstream society. Whilst VHWs tend to be the same ethnicity as villagers, this is less true for other providers. A third of respondents ‘sometimes’ had language problems with district or commune providers, and one ethnic Vietnamese commune health worker who spoke Van Kieu felt neither fully accepted nor fully trusted.

In theory, cost should not deter care-seeking because malaria diagnosis and treatment are free. However, these involve transportation, opportunity and (sometimes) medical ‘extras’ costs that this community could ill-afford, which may help explain why some discharged themselves from care and were lost to follow-up. Such charges are imposed increasingly as Vietnam’s health system is decentralised.

**Discussion**

This mixed-method study in Quang Tri province in central Vietnam was designed by a multi-disciplinary team that included malaria experts and social scientists. It set out to map the non-biological ‘causal pathways’ that led to the problem of persistent malaria in a remote ethnic minority population. As Hawe et al argue, exploring the underlying influences that precipitate, amplify or mitigate direct health risks provides evidence that can assist programmers to design and target comprehensive interventions to bring about and sustain necessary changes; the same approach used in program evaluation can pinpoint specific opportunities to address quality concerns [18].

**Strengths and weaknesses of the study**

Particular strengths of the study were the involvement of stakeholders from various health levels, including the community itself, and the triangulation of data through use of multiple methods (quantitative and qualitative), including self-report and the more objective tools of observation and record review. Malaria social scientists have noted the need for community-level malaria investigations to commence with qualitative methods that help explain behaviours, thus permitting grounded development of structured surveys [19]. This formative approach was one of our study’s strengths. However, due to lack of resources and expertise, systematic preparation and analysis of complete transcripts were not conducted, preventing full utilisation of qualitative data to illuminate the study’s quantitative findings.

Another limitation was a lack of definitive data from CHWs on case management and microscopy quality, which reflects the more rudimentary health reporting often found in remote settings. However, our objective was to map pathways in one study site and not to produce generalisable findings, which in any case would be inappropriate given the small number of communes explored and relatively small sample of providers and community members. This study also did not attempt to identify the role of biological factors such as vector prevalence or drug sensitivity; thus preventing us from arguing conclusively the relative importance of all potential factors.

**Systems and the community: a dual focus for malaria control in remote settings**

Figure 1 summarises relationships and pathways to malaria persistence drawn from this study and lays out the underlying influences that apparently explained weaknesses found at both health systems and community levels. This model excludes vectors, weather events and drug sensitivity. We present this as a conceptual framework for mapping our findings, and for possible adaption by researchers wishing to investigate such pathways in other complex settings.

Previous studies in Vietnam have found widespread misunderstanding about malaria treatment and prevention among populations in similar isolated endemic areas.
[20,21]. Our study found around a quarter of the community shared these misunderstandings, and our model suggests this may have contributed to poor health behaviours. Health systems managers often assume (as here) that minority group customs, culture or knowledge ‘barriers’ account for poor behaviours (and outcomes), assumptions that typically lead solely to community education interventions. The national program’s ratio for bed-net sufficiency also rests upon assumptions about net-sharing, and about where people actually sleep. Our major finding — that over half of households surveyed lacked sufficient bed-nets — illustrates the risks of untested assumptions, particularly in view of population sleeping patterns and mobility through forests and borders, which increases net requirements while enhancing exposure risk. A recent study in Vietnam found that regular forest work accounted for 53% of \textit{P. falciparum} infections, with increased risk if people used nets at home but not in forests [22]. Another found that movement of infrastructure project workers within forests (which was occurring in our site) was a source of ongoing malaria [4]. While respondents — particularly women and the unschooled — require an appropriate educational program, it is clear that responsibility for non-use of bed-nets, and/or ongoing malaria, cannot fully be placed at the feet of this community.

A review by Williams and Jones [23] found that malaria studies typically focused on the role of mothers or care givers in malaria management, while few looked at health care quality. This is surprising given the pivotal role played by both providers and rational drug use. The World Health Organization [24] has noted that health worker shortages — an increasing global problem and one found in our site — are linked to higher mortality rates. A recent review [25] of the impact of health reforms on Vietnam’s commune-level services found poorer quality CHSs in remote areas, especially where ethnic minorities live. We found that local providers often lacked diagnostic skills, time, equipment and/or appropriate drugs for populations in this remote region. Even temporary shortfalls in the supply of anti-malarial drugs, especially during outbreaks, could have serious impacts. Additionally, District Hospital staff estimated that one-third of malaria patients discharged themselves early for cost reasons (medical ‘extras’), and were usually lost to follow-up. Thus, presumptive, under-treatment and unnecessary treatment probably occurred, which are known to endanger individual patients and may contribute to the emergence of drug resistance [1].

Conclusion
A recent multi-country analysis found increasing use of income-generating malaria services and reductions in free services, with low provider salaries associated with inappropriate care-giving [26]. Regional disparities in revenue-raising and human resources can result in uneven implementation of control programs [27]. In a poor province with limited revenues like Quang Tri, care must be taken to ensure that pressures to charge additional service fees do not discourage people from seeking and completing malaria treatment. Malaria control in this site cannot be achieved through community education alone. Focused training, strategies to attract staff to remote areas, appropriate transportation and communication systems, greater efforts to keep (often impoverished) patients under care, and robust supply chains for drugs and impregnated bed-nets — with regular monitoring of use, quality and sufficiency — are among the responses that can further strengthen Vietnam’s efforts to address malaria persistence in this isolated region.

Abbreviations
CHS: Commune Health Station; DH: District Hospital; FGD: Focus Group Discussion; KAP: Knowledge, Attitudes and Practices; MC: Malaria Control; NMCP: National Malaria Control Program; NIMPE: National Institute for Malariology, Parasitology and Entomology; SSI: Semi-structured Interview; VHW: Village Health Worker.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions
MM conceptualised and designed the study, trained co-investigators, led the analysis process and was primarily responsible for drafting the manuscript. QAN coordinated the field work and conducted the majority of field research, entered and analysed quantitative data and contributed to the analysis process. SC made substantial contributions to training of co-investigators, data analysis and...
revised manuscript drafts. BAB contributed to the analysis process and revision of the manuscript. NHD and TN contributed to analysis of data and revision of the manuscript. All authors read and approved the final manuscript.

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References


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Network-based social capital and capacity-building programs: an example from Ethiopia

Shoba Ramanadhan*1, Sosena Kebede2, Jeannie Mantopoulos2 and Elizabeth H Bradley2

Abstract

Introduction: Capacity-building programs are vital for healthcare workforce development in low- and middle-income countries. In addition to increasing human capital, participation in such programs may lead to new professional networks and access to social capital. Although network development and social capital generation were not explicit program goals, we took advantage of a natural experiment and studied the social networks that developed in the first year of an executive-education Master of Hospital and Healthcare Administration (MHA) program in Jimma, Ethiopia.

Case description: We conducted a sociometric network analysis, which included all program participants and supporters (formally affiliated educators and mentors). We studied two networks: the Trainee Network (all 25 trainees) and the Trainee-Supporter Network (25 trainees and 38 supporters). The independent variable of interest was out-degree, the number of program-related connections reported by each respondent. We assessed social capital exchange in terms of resource exchange, both informational and functional. Contingency table analysis for relational data was used to evaluate the relationship between out-degree and informational and functional exchange.

Discussion and evaluation: Both networks demonstrated growth and inclusion of most or all network members. In the Trainee Network, those with the highest level of out-degree had the highest reports of informational exchange, χ² (1, N = 23) = 123.61, p < 0.01. We did not find a statistically significant relationship between out-degree and functional exchange in this network, χ² (1, N = 23) = 26.11, p > 0.05. In the Trainee-Supporter Network, trainees with the highest level of out-degree had the highest reports of informational exchange, χ² (1, N = 23) = 74.93, p < 0.05. The same pattern held for functional exchange, χ² (1, N = 23) = 81.31, p < 0.01.

Conclusions: We found substantial and productive development of social networks in the first year of a healthcare management capacity-building program. Environmental constraints, such as limited access to information and communication technologies, or challenges with transportation and logistics, may limit the ability of some participants to engage in the networks fully. This work suggests that intentional social network development may be an important opportunity for capacity-building programs as healthcare systems improve their ability to manage resources and tackle emerging problems.

Introduction

The global health agenda is increasingly focused on strengthening health systems to improve population-level health outcomes in low- and middle-income countries [1]. One component of this strategy focuses on the development of sufficient workforce capacity, a target area that has been somewhat resistant to intervention thus far [2,3]. The chronic shortage of skilled leadership in the healthcare sectors of low- and middle-income countries greatly hinders the improvement of facilities and systems and the ability to provide needed services [2,4-6].

Successful management and leadership training programs have improved process-related outcomes (such as planning and coordination, delivery of services, and resource management) in a range of countries, including The Gambia, Ethiopia, and Nicaragua [7-9]. Such capacity-building programs typically target human capital, or increased value of a professional from acquiring knowledge, skills, and other assets that may benefit an employer or system. Another benefit of these programs, which is seldom evaluated, may be the development of social capi-
A network perspective on social capital

Although there are a wide range of conceptualizations of social capital [17], we take a network perspective, which holds that the extent to which an individual can realize the benefits of social capital is a function of that individual's position in a given social network [10,18]. This drives our focus on: a) the resources that can be accessed by network members (either directly or through contacts), and b) the structure of relationships or linkages in a network of interest [10]. In a professional network, key benefits of increased social capital among colleagues include increased exchange of information and resources [17,19]. For example, sharing of appropriate and timely information allows individuals to make strategic adjustments to reach their goals [10,20]. Additionally, participants can access novel information by developing relationships with individuals who are dissimilar in terms of experience and professional contacts [21]. By learning in the context of social relationships, network members can come together to identify pressing problems, make sense of complex changes in the environment, and develop innovative solutions [22,23]. Provision of tangible support or material resources from one network member to another also improves network members' performance [24]. By tapping into relationships, network members can gain access to contacts' resources, and perhaps more importantly, to the resources held by the organization(s) represented by those contacts [25]. The challenge is to balance efficiency (knowing others who have contacts and resources that are very different than one's own) and effectiveness (development of a strong set of key contacts) [18].

Social network analysis provides the necessary tools for our analysis as the methodology allows for the assessment of structures in social relationships, as well as the resources exchanged through those relationships [26]. Additionally, given that successful capacity-building relies on changes at the individual, organizational, and system levels [27], the ability to assess relationships and resource flow at multiple levels allows for a holistic assessment. For example, a network in which all members are connected prompts members to develop trust and a sense of obligation towards each other and encourages the generation of social capital [28]. At the same time, at the individual level, connections to other network members are expected to provide new access to resources for program participants. If a capacity-building program results in network structures that support resource exchange, network-based social capital can have an impact on the ultimate goal of management training programs: the improvement of trainee performance.

Despite the number of programs focused on building healthcare worker capacity [2,7-9] and the understanding that increased collaboration and partnerships are important outcomes of capacity-building efforts [29], we are not aware of previous studies examining how such programs may affect the structure and functioning of resulting social networks. Examining this potential impact is important to our understanding of the full impact of capacity-building programs in health. Using survey data from hospital executives participating in an executive-education program in Ethiopia [30], we conducted a social network analysis to examine the growth of the network and the social capital generated by the network (in the form of resource exchange) during the first year of the program. Social network development and social capital generation were not explicit goals of the training program, but we were able to take advantage of this natural experiment to test exploratory hypotheses. We expected to find growth and resource exchange within networks as well as a positive association between network connections and resource exchange. We tested these assumptions among a network of program participants and among a network of participants plus educators and mentors participating in the program.

Case description

Study setting

The capacity-building program under study was a two-year executive-education Master of Hospital and Healthcare Administration (MHA) program in Ethiopia developed by the Federal Ministry of Health (FMOH), the Clinton HIV/AIDS Initiative (CHAI), Jimma University, and the Yale School of Public Health [9,31]. The program
was implemented at the request of the FMOH, with the goal of developing skilled executives to improve hospital management in Ethiopia, a low-resource, high-demand setting. This program was part of a larger quality improvement effort targeting the Ethiopian healthcare system, which began decentralization in 1994. The course was offered by Jimma University in Jimma, Ethiopia and was the first graduate-level program for hospital management in the country. The course was administered and taught jointly by faculty from Jimma and Yale Universities, with local coordination provided by a Program Director and Program Assistant. As an executive-education program, the course was offered over two years, with three-week long sessions in residence three times per year, as well as regular progress reports and evaluations when trainees were working at their hospitals.

Executives of public hospitals were eligible to apply. The course focused on improving trainees’ skills in a range of management-related areas, such as human resources, hospital operations, financial management, strategic planning, and leadership. Trainees also had the opportunity to develop professional connections with each other as well as with leaders and mentors in Ethiopia and the United States.

Study design and respondents
We conducted a cross-sectional study at the end of the first year of the MHA program to describe the social networks that developed during the year. Data were collected with a self-administered survey of two groups of respondents: trainees and supporters. Trainees were the first Chief Executive Officers (CEOs) of public hospitals in Ethiopia. Supporters comprised educators and mentors formally linked with the MHA program through either Yale or Jimma University or through CHAI. We contacted all 25 trainees enrolled in the MHA program and 38 supporters affiliated with the program to complete the survey. All research procedures were approved by the Human Investigation Committee at the Yale School of Public Health and the Institutional Review Board at Jimma University.

Data collection and measures
The self-administered survey was distributed in December 2008 and January 2009 and required approximately 20 minutes to complete. Paper copies of the survey were distributed to all trainees in residence during the December course session and electronic copies were distributed to all other respondents. Surveys were administered in English, which was the language of instruction and a requirement for participants in the MHA program.

For this study, we focused on two networks: 1) the Trainee Network, which was comprised solely of trainees, and 2) the Trainee-Supporter Network, which included trainees and supporters (educators and mentors). Respondents were presented with a roster that listed all trainees and supporters. The survey asked all respondents to identify trainees and supporters with whom they interacted for professional purposes. Respondents also noted whether or not they were acquainted with each network member before the MHA program started. From these responses, we derived our measures of interest for each network.

We measured a series of network characteristics which have been shown in other settings to promote exchange of information and flow through networks [26]. These measures were based on data about connections (or reported relationships) between network members. Some measures focus on presence or absence of a connection, whereas others include information about the ‘direction’ of the connection. For the latter, the measure can capture whether Member X reported a connection to Member Y, Y reported a connection to X, or both reported a connection to each other.

To describe the network as a whole, the first measure of interest was network density, or the proportion of possible relationships between members that were realized, which described the extent to which network members are connected, regardless of the direction of connections [26]. A more dense, or more highly connected, network may be useful for sharing information and resources and cooperation, whereas a more sparsely connected network may provide greater access to diverse contacts and novel resources [10,18]. A density level of around 15-20% is expected to support knowledge-sharing in a network of about 100 members [32]. We also identified isolates, individuals who reported no connections to other network members. Isolates are of interest as their lack of connections prevents them from contributing to or benefiting from network membership. Last, we identified components, or subgroups of members that are not connected to each other and therefore cannot share information and resources between subgroups [26].

Shifting our focus to individual network members, we calculated degree, the number of connections between a given network member and all other network members, regardless of the direction of ties [33]. The bulk of our analyses focused on out-degree, or connections from a given network member to other network members. Thus, if Member X reported three connections with other network members, that member’s out-degree value would be three, regardless of how many network members reported connections to Member X. Compared with degree, this measure narrows the focus to connections that may be perceived as functionally useful to respondents [34]; here, these connections involve the set of individuals from whom respondents may seek and gain skills. In the Trainee Network, ‘trainee out-degree’ was the
number of connections a trainee reported regarding other trainees, grouped into tertiles. In the Trainee-Supporter Network, ‘trainee-supporter out-degree’ was the number of connections to supporters reported by each trainee, grouped into tertiles. Last, geographic homophily referred to whether or not pairs of network members worked in the same region.

To assess potential by-products of social network development, we measured informational and functional exchanges, which are complementary manifestations of social capital that can help trainees achieve work-related goals [10,24]. Informational exchange refers to access to necessary knowledge, the ability to transmit it to the correct person, and acquisition of information with sufficient time to react [18]. Trainees were asked whether or not they received guidance in non-classroom settings from: a) other trainees, and b) supporters on a series of subjects. These topics included: problem-solving, human resources, finance management and budgeting, basic public health, biostatistics/research methods, hospital operations, strategic management, health policy development and analysis, health ethics and public health law, leadership, and management information or tools. The list of topics was defined in the curriculum as critical to leadership, and management information or tools. The network transitioned from having seven isolates (individuals who were not connected to anyone) and two components. At year 1, the network had one-third were rural.

The network graphs comparing connections before the program started at year 1 (Figure 1) and key network measures (Table 2) demonstrate network-level growth. The network transitioned from having seven isolates (individuals who were not connected to anyone) and two components (distinct and isolated subgroups) to having zero isolates and only one component. At year 1, the network demonstrated closure, or the ability of all members to connect with each other, either directly or through contacts. The density of connections increased from 4% to 13% of all potential connections over the year. In terms of resource exchange, 55% of trainees reported that they had informational exchanges with other trainees during

Results

Trainee network

Among trainees, 23 of 25 individuals completed the survey (92% response rate). Table 1 describes the characteristics of trainees’ hospitals. The trainee hospitals had an average 204 beds with a range of 40-800 beds, and the average number of employees per hospital was 399 employees, with a range of 82-2500 employees. The majority of hospitals (72%) were classified as regional; one-third were rural.

The network graphs comparing connections before the program started at year 1 (Figure 1) and key network measures (Table 2) demonstrate network-level growth. The network transitioned from having seven isolates (individuals who were not connected to anyone) and two components (distinct and isolated subgroups) to having zero isolates and only one component. At year 1, the network demonstrated closure, or the ability of all members to connect with each other, either directly or through contacts. The density of connections increased from 4% to 13% of all potential connections over the year. In terms of resource exchange, 55% of trainees reported that they had informational exchanges with other trainees during
the first year of the program. The same percentage reported functional exchange with other trainees. We found that trainee out-degree (the number of connections reported by the trainee regarding other trainees) increased from 1.0 to 3.0 connections in the first year of the program, which was not a statistically significant increase. We found increased variation in trainee out-degree and trainee in-degree values at year 1 compared with the beginning of the program, suggesting that the network became more centralized, or more centred on a subset of individuals.

At year 1, trainees in the lowest out-degree tertile averaged 0.5 outgoing connections compared with an average of 2.0 outgoing connections for the middle tertile, and 6.1 outgoing connections for the highest tertile. Individuals with the highest level of connections were more likely to be working in the capital city of Addis Ababa compared with other regions (Fisher’s exact test, p = 0.03). We found a significant (p < 0.001) association between regional homophily and connections reported at year 1. Of potential connections among individuals from the same region, 45% (45 of 100) were reported compared with 6% (30 of 500) of potential connections among individuals from different regions.

As presented in Table 3, we found that at year 1, trainee out-degree was positively associated with informational exchange, $\chi^2(1, N = 23) = 123.61, p < 0.01$. Those with the highest tertile of trainee out-degree had the highest reports of informational exchange. We did not find a statistically significant relationship between trainee out-degree and functional exchange, $\chi^2(1, N = 23) = 26.11, p > 0.05$.

Trainee-Supporter Network

For the larger network, 41 of 63 individuals completed the survey (65% response rate), with a 47% response rate among supporters. Network-level growth was assessed using a pair of network graphs (Figure 2) and a series of complementary measures (Table 4). The density

**Table 1: Descriptive characteristics for hospitals led by trainees (n = 25).**

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>(32%)</td>
</tr>
<tr>
<td>Urban</td>
<td>17</td>
<td>(68%)</td>
</tr>
<tr>
<td><strong>Number of beds: mean</strong></td>
<td>204</td>
<td>40-800</td>
</tr>
<tr>
<td><strong>Number of employees: mean</strong></td>
<td>399</td>
<td>82-2500</td>
</tr>
<tr>
<td><strong>Hospital classification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal</td>
<td>4</td>
<td>(16%)</td>
</tr>
<tr>
<td>Regional</td>
<td>18</td>
<td>(72%)</td>
</tr>
<tr>
<td>Sub-regional/Zonal</td>
<td>3</td>
<td>(12%)</td>
</tr>
</tbody>
</table>
increased from 3% to 13% of all potential ties realized over the first year of the program. We analyzed density increases among subgroups and found increased ties from trainees to supporters (3% to 20%), from supporters to trainees (0% to 12%) and from supporters to supporters (5% to 9%). The number of isolates decreased from 8 to 2 in this network, and there was only one component at year 1, ignoring isolates. Again, increased variation in out-degree and in-degree values for the full network from the beginning of the program to year 1 suggests that the network became more centralized. Assessing the overall network, the individuals with the most connections in this network were mainly faculty and staff that played a central role in program administration and teaching.

Table 2: Descriptive measures for the trainee-only sociometric network (25-member network)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-MHA</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network-level measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density (proportion of potential ties that were actually realized)</td>
<td>0.04</td>
<td>0.13</td>
</tr>
<tr>
<td>Isolates (members of the network not connected to anyone else)</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Components (distinct and isolated subgroups in the network)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Individual-level measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree (all connections reported to/from the respondent)</td>
<td>Mean: 1.92</td>
<td>Mean: 4.88</td>
</tr>
<tr>
<td></td>
<td>SD: 1.79</td>
<td>SD: 4.42</td>
</tr>
<tr>
<td>Trainee out-degree (number of connections reported by respondent regarding others)</td>
<td>Mean: 1.04</td>
<td>Mean: 3.00</td>
</tr>
<tr>
<td></td>
<td>SD: 1.43</td>
<td>SD: 4.62</td>
</tr>
<tr>
<td>Trainee in-degree (number of connections reported regarding respondent by others)</td>
<td>Mean: 1.04</td>
<td>Mean: 3.00</td>
</tr>
<tr>
<td></td>
<td>SD: 1.25</td>
<td>SD: 1.67</td>
</tr>
</tbody>
</table>

Table 3: Relationship between trainee out-degree and resource exchange at year 1, contingency table analysis (n = 23).

<table>
<thead>
<tr>
<th>Trainee out-degree</th>
<th>Informational: no exchange (%)</th>
<th>Informational: some exchange (%)</th>
<th>Functional: no exchange (%)</th>
<th>Functional: some exchange (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>70.00</td>
<td>8.33</td>
<td>40.00</td>
<td>33.33</td>
</tr>
<tr>
<td>Medium</td>
<td>10.00</td>
<td>33.33</td>
<td>30.00</td>
<td>16.67</td>
</tr>
<tr>
<td>High</td>
<td>20.00</td>
<td>58.33</td>
<td>30.00</td>
<td>50.00</td>
</tr>
</tbody>
</table>

Observed $X^2$ 123.61**

Key: – < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001
When we narrowed our focus to relationships between trainees and supporters, we found that at year 1, 94% of trainees reported informational exchange with supporters and 55% reported functional exchange with supporters. The average trainee-supporter out-degree at year 1 was 8.1 connections. In this network, the average number of outgoing connections with supporters was 2.3 for the lowest trainee-supporter out-degree tertile, 5.3 for the middle tertile, and 14.9 for the highest tertile. Trainee-supporter out-degree did not vary significantly between regions.

As seen in Table 5, trainee-supporter out-degree was positively associated with informational exchange, $\chi^2(1, N = 23) = 74.93, p < 0.05$. Those in the highest tertile of trainee-supporter out-degree also had the highest reports of informational exchange. We found a similar pattern for trainee-supporter out-degree and functional exchange, $\chi^2(1, N = 23) = 81.31, p < 0.01$.

**Discussion and evaluation**

We found substantial development of social networks within the context of a capacity-building program in healthcare management. Through involvement with the MHA program, participants developed professional connections with each other and with supporters, including faculty in Ethiopia and hospital executives in the United States of America. These connections supported valuable exchanges including information relating to hospital management and resources such as hands-on assistance.

The networks that developed through the first year of this program demonstrated several characteristics that have been shown to support resource exchange such as sufficient network density and connections between all or almost all members [26,32]. We found that the number of connections within the network was associated with likelihood of resource exchange, as hypothesized based on extant social network literature [10,40]. This level of growth and exchange may be expected in high-resource professional settings, such as corporations, academic institutions, or hospital systems in high-income countries [32,41] but is impressive in a low-resource setting given the level of investment required to support network development [40]. The growth is also notable given that network development was not an explicit goal of the training program.

Although the network growth and resource exchange are promising, limited resources for communication may have inhibited network development of some network members. We found that the network of program participants centered on a subset of individuals from the capital city of Addis Ababa. The centralization of the network is important because the literature suggests that central members of a network have higher potential to access and utilize resources than their colleagues [10,42]. The pattern may reflect the relative ease with which individuals from Addis Ababa can interact, without communication impediments such as transportation and logistics that individuals from other regions may face. Information and communication technologies, such as mobile phones or internet, can mitigate challenges of physical distance and logistics in low-resource settings [25]. At the time of the study, reliable access to such technologies was limited for individuals working outside the Addis Ababa region [43], though these technologies may play an important role in network development in the future. Here, reduced opportunities to communicate and interact may have had a large impact on resource exchange in this network, as strong connections are required to support exchange of complex information [40].
We also saw evidence of the benefits of diverse connections for program participants and found that program participants were able to gain different categories of resources from different types of network members. This is likely a function of differential access to resources by individuals in different organizations and levels of power [10]. In a low-resource setting, other constraints may also be an important driver of resource exchange. For example, the material costs and logistical barriers associated with providing tangible support to colleagues may be too great for program participants. For mentors and educators, the costs of sharing both types of resources may be lower. The severe system-level constraints experienced by trainees were evident in a recent assessment of public hospitals engaged in a quality improvement initiative, including those represented by trainees in this program [44].

Experience with the MHA program suggests that programs to build human resource capacity in low-income countries can also increase network-based resources. However, given the common challenges of geography and limited communication technologies in such settings, social network development and resource exchange will likely be more effective if they are integrated as explicit

<p>| Table 4: Descriptive measures for the trainee-supporter sociometric network (63-member network). |</p>
<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-MHA</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network-level measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density (proportion of potential ties that were actually realized)</td>
<td>0.03</td>
<td>0.13</td>
</tr>
<tr>
<td>Density between and within groups of trainees and supporters</td>
<td>Ties among trainees: 0.04</td>
<td>Ties among trainees: 0.13</td>
</tr>
<tr>
<td></td>
<td>Ties from trainees to supporters: 0.03</td>
<td>Ties from trainees to supporters: 0.20</td>
</tr>
<tr>
<td></td>
<td>Ties from supporters to trainees: 0.00</td>
<td>Ties from supporters to trainees: 0.12</td>
</tr>
<tr>
<td></td>
<td>Ties among supporters: 0.05</td>
<td>Ties among supporters: 0.09</td>
</tr>
<tr>
<td>Isolates (members of the network not connected to anyone else)</td>
<td>8 isolates</td>
<td>2 isolates</td>
</tr>
<tr>
<td>Components (distinct and isolated subgroups in the network)</td>
<td>1 component + isolates</td>
<td>1 component + isolates</td>
</tr>
<tr>
<td><strong>Individual-level measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree (all connections reported to/from the respondent)</td>
<td>Mean: 3.52</td>
<td>Mean: 14.22</td>
</tr>
<tr>
<td></td>
<td>SD: 3.11</td>
<td>SD: 10.87</td>
</tr>
<tr>
<td>Out-degree (number of connections reported by respondent re: others)</td>
<td>Mean: 1.87</td>
<td>Mean: 8.14</td>
</tr>
<tr>
<td></td>
<td>SD: 2.88</td>
<td>SD: 10.81</td>
</tr>
<tr>
<td>In-degree (number of connections reported re: respondent by others)</td>
<td>Mean: 1.87</td>
<td>Mean: 8.14</td>
</tr>
<tr>
<td></td>
<td>SD: 1.77</td>
<td>SD: 5.68</td>
</tr>
<tr>
<td>Trainee-supporter out-degree (number of connections reported by trainees regarding supporters)</td>
<td>Mean: 1.04</td>
<td>Mean: 8.26</td>
</tr>
<tr>
<td></td>
<td>SD: 1.46</td>
<td>SD: 5.82</td>
</tr>
</tbody>
</table>
goals of training programs to develop human resources for health. For instance, curricula can be developed to facilitate opportunities for developing new contacts. The focus on development of relationships should extend both to fellow trainees as well as supporters of the trainees, given the breadth of resources that can be accessed through diverse contacts. Another important lesson from the MHA experience is the importance of an enabling environment. This program was developed at the request of the Ethiopian government and was part of a broader effort to reform the healthcare system, such as adopting new hospital standards. This climate of organizational and system change was supportive of changing approaches to hospital management, and thus presented an environment in which social capital exchange was warranted and could have impact. Network development and social capital exchange may be particularly critical in low-resource settings as such networks can foster information and function exchanges in inexpensive ways.

There are several limitations that help place the results in context. First, although we had a high response rate, some trainees and supporters did not complete the survey potentially influencing our findings. However, we used out-degree as our independent variable, which is robust to missing data [45]. Second, the data are cross-sectional; thus causation cannot be assessed. However, a connection must exist between individuals before resources can be exchanged across that connection, so the directionality assumed seems plausible. Third, social desirability bias may have resulted in respondents over-reporting connections and/or resource exchanges, although we encouraged frank responses during survey administration. Despite these limitations, the study is a novel attempt to study network-based social capital in capacity-building programs targeting healthcare workforce development. Additionally, our assessment of resource exchange uses a broad view of social capital in public health settings, rather than the typical focus on communication patterns [46].

Developing human resources for health is an international priority in global health [47], and our paper highlights the importance of taking a broad view of outcomes of capacity-building programs. Capacity-building programs provide a unique opportunity to direct interactions between participants and potentially useful contacts through coursework, mentoring relationships, and other course-related activities. Active promotion of relationship-building by organizations and/or program developers can support diversity of contacts and development of strong channels for knowledge transfer [48-50]. In this way, the workforce and system will be better equipped to solve problems in healthcare by more effectively managing, accessing, and utilizing resources, thus truly building capacity [10,11].

### Conclusions

This analysis suggests that network-based social capital may be a useful addition to the goals and evaluation of capacity-building programs. As discussed by Hawe and colleagues [11], social capital deserves further attention in capacity-building efforts as it leaves the system under intervention with greater ability to tackle current issues as well as those outside the scope of the program and future issues. Through active development of diverse professional networks and investment in relationship-building within the context of system resource constraints,
capacity-building programs can build stronger healthcare workforces in low- and middle-income countries.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
All authors were involved in study and survey instrument design. SR conducted the data analysis and drafted the manuscript. EHB, SK, and JM provided intellectual content and manuscript revisions. All authors read and approved the final manuscript.

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5. Ramanadhan et al. 2010
doi: 10.1186/1478-4491-8-17
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Strategies for coping with the costs of inpatient care: a mixed methods study of urban and rural poor in Vadodara District, Gujarat, India

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Background In India, coping mechanisms for inpatient care costs have been explored in rural areas, but seldom among urbanites. This study aims to explore and compare mechanisms employed by the urban and rural poor for coping with inpatient expenditures, in order to help identify formal mechanisms and policies to provide improved social protection for health care.

Methods A three-step methodology was used: (1) six focus-group discussions; (2) 800 exit survey interviews with users of public and private facilities in both urban and rural areas; and (3) 18 in-depth interviews with poor (below 30th percentile of socio-economic status) hospital users, to explore coping mechanisms in greater depth.

Results Users of public hospitals, in both urban and rural areas, were poor relative to users of private hospitals. Median expenditures per day were much higher at private than at public facilities. Most respondents using public facilities (in both urban and rural areas) were able to pay out of their savings or income; or by borrowing from friends, family or employer. Those using private facilities were more likely to report selling land or other assets as the primary source of coping (particularly in rural areas) and they were more likely to have to borrow money at interest (particularly in urban areas). Poor individuals who used private facilities cited as reasons their closer proximity and higher perceived quality of care.

Conclusions In India, national and state governments should invest in improving the quality and access of public first-referral hospitals. This should be done selectively—with a focus, for example, on rural areas and urban slum areas—in order to promote a more equitable distribution of resources. Policy makers should continue to explore and support efforts to provide financial protection through insurance mechanisms. Past experience suggests that these efforts must be carefully monitored to ensure that the poorer among the insured are able to access scheme benefits, and the quality and quantity of health care provided must be monitored and regulated.

Keywords Hospitalization, expenditures, coping strategies, insurance, social capital, India
KEY MESSAGES

- In both urban and rural areas, respondents using public hospitals were poorer than those using private hospitals.
- While most of those hospitalized at public facilities were able to pay out of savings or income, or by borrowing from friends, family or employer, individuals using private facilities were more likely to sell land or other assets (rural areas) and they were more likely to have to borrow money at interest (urban areas).
- In India, national and state governments should invest in improving the quality and access of public first-referral hospitals. This should be done selectively—focusing on rural areas and urban slum areas—to promote a more equitable distribution of resources.

Introduction

The aim of this study is to explore mechanisms employed by the urban and rural poor for coping with inpatient expenditures, in order to help identify formal mechanisms and policies to provide improved social protection for health care for these populations.

Background

In India, health care costs, and those for inpatient care in particular, pose a barrier to seeking health care, and can be a major cause of indebtedness and impoverishment. Three-quarters (1999 to 2003 estimates) of total health care spending flows from individuals and households directly to health care providers (predominantly private) in the form of out-of-pocket payments (World Health Organization 2006a). On average, the poorest quintile of Indians is 2.6 times more likely than the richest to not seek medical treatment when ill, and only one-sixth as likely to be hospitalized (Peters et al. 2002). In India, 31.1% of individuals fall below the World Bank’s absolute poverty threshold of US$1.08 per day. Subtraction of out-of-pocket payments for health care increases the poverty headcount to 34.8%, representing over 37 million people (van Doorslaer et al. 2006). A study of more than 3000 households in 20 Gujarati villages found that, over 25 years, among all households that fell into poverty, ill health and related expenses were critical in 85% of cases (Krishna et al. 2003).

In Gujarat (as in all India), the poor are more likely than the rich to choose public rather than private inpatient facilities (Mahal et al. 2000). Nonetheless, 54.9% of all hospitalizations among the rural population below the poverty line (BPL) of Gujarat, and 51.1% of all hospitalizations among the urban BPL population, are in private hospitals.1 Hospital charges faced by the urban BPL population are higher than those faced by their rural counterparts, at both public and private facilities. For example, the average charge per day of hospitalization in a private facility, for BPL patients, is Rs. 125.7 in urban Gujarat compared with only Rs. 57.8 in rural Gujarat (Mahal et al. 2000).

The term ‘coping strategies’ was coined during the 1980s in the literature on household responses to lack of food and nutrition. The term refers to the mechanisms or activities undertaken by members of a household that help them survive through a crisis situation (McIntyre and Thiede 2007). Figure 1 lists some of the measures available for coping with financial shocks. The strategies have been categorized as informal (or traditional) and formal, i.e. market-based or publicly provided (World Bank 2001). In India, formal mechanisms are largely inaccessible to the poor. In theory, government provision of universal and free health care should cover the poor, but in practice it often does not. Private-for-profit health insurance and government social insurance are geared primarily towards India’s formal sector, comprising less than 10% of the total population (Gupta and Trivedi 2005).

There have been many studies of the informal mechanisms used by poor rural households for coping with financial shocks, and more specifically those related to medical expenditure (Rosenzweig 1988; Townsend 1994; Kochar 1995; Krishna et al. 2003). In rural areas, when a shock hits, people cope by selling livestock or other assets, or calling on support networks for transfers or loans. If these mechanisms fail or fall short, households may increase their labour supply, working more hours or involving more household members (women or children), or borrow from a private lender at high rates of interest. In Gujarat, the rates of interest on these loans start as high as 5–7% per month (Krishna et al. 2003). If all else fails, households reduce consumption—including the consumption of medical services and goods—and go hungry.

Far less is known about coping strategies among the poor living in urban areas, including those who have migrated from rural areas for work. It has, however, been argued that the strong social networks that provide mutual insurance in India are actually a deterrent to mobility, and explain rates of urbanization that are low relative to other low-income countries (Munshi and Rosenzweig 2005). These authors show, based on 1982 and 1999 survey data, that migration (not necessarily to urban areas, but away from one’s native village) is associated with a significantly lower probability of receiving loans from friends or family. International literature suggests that those who have migrated for work are particularly vulnerable as they are more likely to work longer hours, live and work in poorer conditions, be socially isolated and lack access to basic amenities (International Organisation for Migration 2005). In 2002, a World Bank consultation highlighted the fact that, despite a growing population of urban poor (27% of 285 million people), for whom many health indicators are as bad or worse than for poor rural populations, there has been little analytical work on health issues of the urban poor (World Bank 2002).
Methods

Study setting

The study was conducted in Vadodara District, Gujarat State, between October 2007 and December 2008. Vadodara District has a population of 3.6 million people, 52.1% of whom are male and 47.9% female (Office of the Registrar General 2001). The district’s only city, Vadodara, is the third largest city in the state of Gujarat and the sixteenth largest in India (UNDP and World Bank 1999). In 2001, the urban population of Vadodara accounted for 45% (1,647,317) of the total district population. Like many other Indian cities, Vadodara is growing rapidly, from only 950,000 in 1981, to 1.3 million in 1991 and 3.6 million in 2001 (Office of the Registrar General 2001). The dominant industries in Vadodara city are petrochemicals, fertilizers, pharmaceuticals, cotton textiles and machine tools. Agriculture predominates in rural areas, with the major crops being: rice, wheat, yellow peas, grams, oilseeds, groundnut, tobacco, cotton and sugarcane.

Step 1: Focus group discussions

Focus group discussions (FGDs) were conducted as the first step in a three-step methodology. The FGDs aimed to: (i) identify commonly used sources of inpatient care among poorer populations; and (ii) explore strategies for coping with the costs of inpatient care, to help develop a list of options for questions in a hospital exit survey. Three FGDs were conducted in urban areas and three in rural areas. In Vadodara city, three different urban slum areas were purposefully selected. Vadodara slum areas are quite segregated according to the State of origin of the residents; our FGD groups consisted of migrants from Uttar Pradesh, Rajasthan and Maharashtra. Eight to 12 adult respondents (>18 years of age) were included in each FGD, including both men and women, and only those who had experienced hospitalization within the previous year and had migrated to the city within the last 5 years, as recent migrants were expected to be the most vulnerable to the costs of health care. In rural areas, three sub-districts (out of 12 in Vadodara) were randomly selected, and within each sub-district a poor residential area (usually a ‘para’ or neighbourhood) on the periphery of a village was purposefully selected. Group size and inclusion/exclusion criteria were the same as in urban areas, with the exclusion of the migration criterion.

FGDs were conducted in the Gujarati language by the Principal Investigator (RJ) and with the permission of respondents, recorded using a digital video recorder. They were transcribed in English, and analysed and coded in MS Word.

Step 2: Exit surveys

The goals of the exit survey were: (i) to document costs of hospitalization (both medical and non-medical) at private and public facilities, and in urban and rural areas; (ii) to explore the utilization of different coping strategies; and (iii) to identify poor households who could be interviewed, in-depth, in the final step of field-work.

Eight-hundred respondents were sought, with equal numbers in urban and rural areas, and equal numbers using the public and private hospitals that were most commonly mentioned in the focus-group discussions. In rural areas, respondents had to be resident in the three sub-districts included in Step 1. Urban respondents had to be resident in Vadodara city. In both urban and rural areas, hospitals were purposively selected based on frequency of use reported by respondents in the FGDs. The rural hospitals tended to be much smaller than the urban facilities; hospitals had to have a minimum of 15 inpatient beds in order to be included in the study.

One hundred exit surveys were conducted at each of four urban hospitals (two public and two private). Given the smaller size of rural hospitals, interviews had to be conducted at six facilities (three public and three private), with 65–70 respondents per hospital. Potential respondents were identified by having hospital administrators provide a list of patients to be
discharged on the day of exit interviews. Exit interviews were restricted to those hospitalized in general wards (thus excluding those who paid extra—both at public and private facilities—to stay in private rooms). Patients (and their families) were approached for interviews immediately after they made their payments and had received their discharge cards. In order to be included in the exit surveys, respondents had to be: (i) older than 18 years of age; (ii) hospitalized for more than 24 hours; and (iii) resident in the corresponding area (either urban or rural) at the time of the interview (for example, residents of a rural village hospitalized in urban facilities were excluded from the study).

Interviews were conducted inside hospital premises by RJ and three trained investigators. Data were collected using an interview schedule which was filled out by the interviewer. The following data were collected:

- Place of residence and place of origin;
- Details as to when they moved to their current place of residence;
- Cause of hospitalization;
- Expenditures on hospitalization, with breakdown by type of costs, e.g. medicines, doctors' fees, etc;
- Indicators of socio-economic status.

In most cases the patient was interviewed (generally with their accompanying family present). In those cases where patients were unable to respond (for example, if the patient remained ill or unresponsive at the time of discharge) we interviewed an accompanying household member instead. As anticipated, 800 exit interviews were conducted. In no case did potential respondents refuse to participate in the interviews.

Data were double-entered into an Excel database, and cross-checked for any inconsistencies. Analyses were conducted using the statistical software STATA. As a proxy for wealth, we constructed a socio-economic status (SES) index based on household assets and utilities, allowing the weights of these assets to be determined by principal components analysis (PCA) (Filmer and Pritchett 2001). All 26 assets and utilities variables from the survey were retained in the index (see Appendix 1) and weighted based on PCA. Twenty-one categorical variables were converted to dichotomous variables as this provided for greater discrimination amongst poorer households. Ultimately, the index comprised 25 dichotomous variables and one continuous variable (number of rooms). The index was validated by examining the likelihood of ownership of specific assets (or utilities) by decile. For example, it can be seen that no respondent below the 50th percentile reported owning a refrigerator, compared with 65% of respondents in the wealthiest decile (Appendix 1). Respondents were grouped by quintile or decile; in both cases the 1st was the poorest.

**Step 3: In-depth interviews**

After the exit surveys, 18 in-depth interviews were carried out in order to explore further household coping strategies. We aimed to interview people from the poorest three deciles by SES. The respondents were stratified according to type of hospital used (half had used public facilities and half private), place of residence (6 rural and 12 urban), and within urban areas, migration status (6 non-migrants and 6 recent migrants) (Figure 2).²

All interviews were conducted in Gujarati by RJ with the assistance of one trained investigator. For all interviews, the spouse or other family members were present as well as the hospitalized person. A semi-structured interview guide was used. Interviews were recorded, with the permission of respondents, using a digital video recorder, transcribed in English, and analysed and coded in MS Word.

**Ethical approval**

Ethical approval was obtained from the Ethics Committee of The London School of Hygiene and Tropical Medicine and from the Health Commissioner of Gujarat State. Free and informed consent of all respondents was obtained; this consent was taken in verbal rather than written form, given high rates of illiteracy in Gujarat State.

**Results**

**Exit surveys**

Table 1 describes the surveyed population, and highlights the main differences between urban and rural respondents, and users of public and private facilities. A majority of respondents were male. Urban respondents and users of private facilities were more likely to be male than their counterparts in rural areas and at public facilities. Distribution of the surveyed population by quintiles of SES suggests that rural respondents were poorer than urban, and users of public facilities poorer than those using private facilities. A slightly higher percentage of urban residents reported having moved to their current place of residence within the last year (8% vs 2%). The broad categories of illnesses reported by respondents differed little between urban and rural areas. However, respondents at public facilities were more likely to report infectious ailments as the primary cause of hospitalization (in rural areas), were more likely to report non-infectious ailments (both in urban and in rural areas) and were less likely to report accidents and injuries. The median duration of hospital stay differed little between

---

² Figure 2 Distribution of in-depth interview respondents
urban and rural areas, but was shorter at public facilities (5 days) than at private facilities (7 days). Table 2 describes the hospital expenditures reported by exit survey respondents. The median expenditure per day was almost three times as high among urban residents (Rs. 398) relative to rural residents (Rs. 138). Expenditures per day were higher at private vs public facilities, and this difference was especially marked in urban areas. Medicine fees were a more important component of total costs in both urban and rural areas. Doctors’ fees were a more important component of the costs at private vs public facilities. Among non-medical fees, the costs of food and travel were particularly important components of total costs at rural public facilities (at 12.4% and 17.6% of total costs, respectively).

Figure 3 provides an overview of the different (primary) coping strategies reported by exit survey respondents. It is clear that for hospitalizations at public facilities (both in urban and in rural areas) most respondents were able to pay out of their savings or income, or by borrowing from friends, family or employer. For hospitalization at private facilities, these were also common means of paying. But relative to users of public facilities, those using private facilities were more likely to report selling land or other assets as the primary source of coping (particularly in rural areas), and they were more likely to have to borrow money at interest (particularly in urban areas).

Differences in coping strategies between the poorest 30% of respondents and the less poor 70% are illustrated in Figures 4a and 4b. In general, there seems to be remarkably little difference in primary coping strategies between the poor and the less poor who used public facilities, although there was a slightly greater reliance on savings and income amongst the less poor 70%. Among rural, private hospital users, the poorest 30% were much more likely than the less poor 70% to have borrowed money on interest, and less likely to have relied on savings and income. It is difficult to comment on ‘poor–less poor’ differences among those using urban, private hospitals, as only 11 respondents falling below the 30th decile used these facilities.

### In-depth interviews

Table 3 provides a description of the 18 in-depth interview respondents (references to respondents provided below correspond to the respondent identification numbers in this table).

#### Poor people choose public facilities due to lower cost

In-depth interview respondents who used public facilities generally reported that they did so because these were perceived to be less costly than private hospitals.

"Because we did not have money, we had to go to the public hospital. We heard that they do not charge services at the public hospital." (Respondent 1)

While this was the most common reason for choosing a public facility, some reported that even the fees charged at the public facility were unaffordable.

"We chose the public hospital because they would provide treatment for free. But even they charged money...five hundred
Table 2  Expenditures on hospitalization, by place of residence and type of hospital used, Vadodara, India

<table>
<thead>
<tr>
<th></th>
<th>Urban Public</th>
<th>Urban Private</th>
<th>Urban Total</th>
<th>Rural Public</th>
<th>Rural Private</th>
<th>Rural Total</th>
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</thead>
<tbody>
<tr>
<td>Observations</td>
<td>198</td>
<td>198</td>
<td>396</td>
<td>200</td>
<td>200</td>
<td>400</td>
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<tr>
<td>Median total expenditures (Rs.)</td>
<td>677.5</td>
<td>4330.5</td>
<td>2525</td>
<td>390</td>
<td>1530</td>
<td>910</td>
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<tr>
<td>Median daily total expenditures (Rs./d)</td>
<td>119.5</td>
<td>629.72</td>
<td>394.44</td>
<td>93.75</td>
<td>277.64</td>
<td>138.33</td>
</tr>
</tbody>
</table>

% breakdown of total expenditures

<table>
<thead>
<tr>
<th>Medical fees</th>
<th>Urban</th>
<th>Urban</th>
<th>Urban</th>
<th>Rural</th>
<th>Rural</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors’ fees</td>
<td>0.2</td>
<td>31.8</td>
<td>24.9</td>
<td>2.6</td>
<td>19.2</td>
<td>16.3</td>
</tr>
<tr>
<td>Medicine fees</td>
<td>55.5</td>
<td>25.3</td>
<td>31.9</td>
<td>51.5</td>
<td>40.4</td>
<td>42.3</td>
</tr>
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<td>Bed fees</td>
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<td>14.4</td>
<td>11.4</td>
<td>4.3</td>
<td>14.2</td>
<td>12.5</td>
</tr>
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<td>Laboratory fees</td>
<td>21.6</td>
<td>9.5</td>
<td>12.1</td>
<td>4.8</td>
<td>8.3</td>
<td>7.7</td>
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<td>0.6</td>
<td>0.4</td>
<td>0.1</td>
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<td>8.1</td>
<td>6.0</td>
<td>6.9</td>
<td>6.7</td>
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<td><strong>89.1</strong></td>
<td><strong>69.7</strong></td>
<td><strong>89.1</strong></td>
<td><strong>85.7</strong></td>
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<td>0.0</td>
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<td>Food</td>
<td>6.3</td>
<td>5.4</td>
<td>5.6</td>
<td>12.4</td>
<td>5.4</td>
<td>6.6</td>
</tr>
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<td>Travel</td>
<td>9.0</td>
<td>4.3</td>
<td>5.3</td>
<td>17.6</td>
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<tr>
<td>Lodging</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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</tr>
<tr>
<td>Other</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.1</td>
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<tr>
<td><strong>Sub-total</strong></td>
<td><strong>15.5</strong></td>
<td><strong>9.7</strong></td>
<td><strong>10.9</strong></td>
<td><strong>30.3</strong></td>
<td><strong>10.9</strong></td>
<td><strong>14.3</strong></td>
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<tr>
<td><strong>Total fees</strong></td>
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<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
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Figure 3  Strategies used for coping with hospitalization costs, by place of residence and type of hospital used, Vadodara, India. Legend (for x axis): 1 = Savings or income; 2 = Borrowed from friends, family or employer; 3 = Borrowed on interest, from moneylender or bank; 4 = Sold land or other assets; 5 = Other (including ‘did extra labour’, ‘don’t know’) (n = 200; 200; 200; 200)
Figure 4  (a) Strategies used for coping with hospitalization costs: poorest 30%, by place of residence and type of hospital used ($n = 108; 53; 68; 11$), (b) Strategies used for coping with hospitalization costs: wealthiest 70%, by place of residence and type of hospital used ($n = 91; 146; 131; 189$). Legend (for x axis): 1 = Savings or income; 2 = Borrowed from friends, family or employer; 3 = Borrowed on interest, from moneylender or bank; 4 = Sold land or other assets; 5 = Other (including ‘did extra labour’, ‘don’t know’).
How can we afford to pay this amount?'' (Respondent 14)

Reasons for using private facilities
Respondents cited a number of reasons for using private hospitals. The most commonly cited reason was that the private hospital was nearby to the respondent's home:

''(We chose the private hospital) only because it was nearby and she (Respondent 11) was in a great deal of pain. It was an emergency and the first hospital that I thought of was this nearby private hospital.''

(Relative of respondent 11)

Several respondents also expressed the belief that private hospitals are of higher quality than public:

''We do not use the public hospital, as the treatment given there is not good. It is very dirty and unhygienic. The private hospital is very clean and well maintained.''

(Respondent 18)

Poor people rely on multiple coping strategies.
Respondents generally reported using multiple (two or more) different strategies for coping with the costs of hospitalization. Respondent 8, for example, was a young woman from Vadodara city, hospitalized in a public facility for gastroenteritis. In order to cover the cost of the hospital stay—Rs. 600—the family drew on their savings and borrowed money from relatives:

''I bought medicines using the money I borrowed from him (my brother) . . . I took 400 rupees from my brother, and I gave approximately 100 rupees from my own (savings). As well, I later borrowed 100 rupees from another relative in order to pay the medical shop.''

(Mother of respondent 4)

Respondent 1, a recent migrant to Vadodara, was also hospitalized in a public hospital, for fever of unknown origin. His family, who earn a living by selling rags and scraps salvaged from garbage, drew on savings and sold a small amount of jewelry:

''I bought medicines using the money I borrowed from him (my brother) . . . I took 400 rupees from my brother, and I gave approximately 100 rupees from my own (savings). As well, I later borrowed 100 rupees from another relative in order to pay the medical shop.''

(Respondent 1)

Poor who use public facilities can pay from savings, income or relying on social networks
As was suggested by the exit survey data, respondents who used public hospitals could generally cope with the costs either through their savings and income or through borrowing from friends, family or employers:

''We paid using money that we had saved for Diwali. We do not have any relatives from whom we can borrow.''

(Respondent 1)

Table 3 Description of 18 in-depth interview respondents

<table>
<thead>
<tr>
<th>No.</th>
<th>City/sub-dist.</th>
<th>Gender</th>
<th>Place of origin</th>
<th>Hospital</th>
<th>Cause of hospitalization</th>
<th>Tot. Exp. (Rs.)</th>
<th>Primary coping strategy used</th>
<th>Age</th>
<th>Occupation</th>
<th>Decile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vadodara</td>
<td>M</td>
<td>Within Gujarat</td>
<td>Public</td>
<td>Fever of unknown origin</td>
<td>535</td>
<td>Savings/income</td>
<td>18</td>
<td>Bag picker</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Vadodara</td>
<td>M</td>
<td>Within Gujarat</td>
<td>Public</td>
<td>Asthma</td>
<td>330</td>
<td>Borrowed from friends/relative/employer</td>
<td>60</td>
<td>Retired</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Vadodara</td>
<td>F</td>
<td>Uttarakhand</td>
<td>Public</td>
<td>Anaemia</td>
<td>660</td>
<td>Sold gold/silver jewellery</td>
<td>19</td>
<td>Labourer</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Vadodara</td>
<td>M</td>
<td>Rajasthan</td>
<td>Private</td>
<td>Malaria</td>
<td>1550</td>
<td>Borrowed from friends/relative/employer</td>
<td>28</td>
<td>Salaried</td>
<td>3</td>
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<tr>
<td>5</td>
<td>Vadodara</td>
<td>F</td>
<td>Rajasthan</td>
<td>Private</td>
<td>Dengue fever</td>
<td>2250</td>
<td>Borrowed from friends/relative/employer</td>
<td>21</td>
<td>Housewife</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Vadodara</td>
<td>F</td>
<td>Rajasthan</td>
<td>Private</td>
<td>Hysterectomy</td>
<td>5300</td>
<td>Savings/income</td>
<td>33</td>
<td>Housewife</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Vadodara</td>
<td>M</td>
<td>(non-migrant)</td>
<td>Public</td>
<td>Blood pressure</td>
<td>900</td>
<td>Borrowed from friends/relative/employer</td>
<td>30</td>
<td>Unemployed</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Vadodara</td>
<td>F</td>
<td>(non-migrant)</td>
<td>Public</td>
<td>Gastroenteritis</td>
<td>600</td>
<td>Borrowed from friends/relative/employer</td>
<td>18</td>
<td>Self-employed</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Vadodara</td>
<td>M</td>
<td>(non-migrant)</td>
<td>Public</td>
<td>General weakness</td>
<td>1500</td>
<td>Borrowed from friends/relative/employer</td>
<td>32</td>
<td>Unemployed</td>
<td>3</td>
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<tr>
<td>10</td>
<td>Vadodara</td>
<td>M</td>
<td>(non-migrant)</td>
<td>Public</td>
<td>Diabetes</td>
<td>23300</td>
<td>Savings/income</td>
<td>55</td>
<td>Self-employed</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Vadodara</td>
<td>F</td>
<td>(non-migrant)</td>
<td>Private</td>
<td>Accident/Diabetes/glucose intolerance</td>
<td>4640</td>
<td>Sold land or other assets</td>
<td>28</td>
<td>Housewife</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Vadodara</td>
<td>M</td>
<td>(non-migrant)</td>
<td>Private</td>
<td>Dental problem</td>
<td>12700</td>
<td>Borrowed from friends/relative/employer</td>
<td>47</td>
<td>Self-employed</td>
<td>4</td>
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<tr>
<td>13</td>
<td>Pafla</td>
<td>F</td>
<td>n.a.</td>
<td>Public</td>
<td>Delivery</td>
<td>890</td>
<td>Borrowed from friends/relative/employer</td>
<td>20</td>
<td>Domestic worker</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Dobhdoi</td>
<td>F</td>
<td>n.a.</td>
<td>Public</td>
<td>Abortion</td>
<td>275</td>
<td>Savings/income</td>
<td>30</td>
<td>Housewife</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>Sankheda</td>
<td>M</td>
<td>n.a.</td>
<td>Public</td>
<td>Diabetic/Pyometrium</td>
<td>1500</td>
<td>Borrowed from friends/relative/employer</td>
<td>40</td>
<td>Domestic worker</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>Pafla</td>
<td>M</td>
<td>n.a.</td>
<td>Private</td>
<td>Accident/Diabetes/glucose intolerance</td>
<td>26500</td>
<td>Sold land or other assets</td>
<td>40</td>
<td>Casual wage labourer</td>
<td>3</td>
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<tr>
<td>17</td>
<td>Sankheda</td>
<td>F</td>
<td>n.a.</td>
<td>Private</td>
<td>Hysterectomy</td>
<td>985</td>
<td>Borrowed from moneylender on interest</td>
<td>40</td>
<td>Casual wage labourer</td>
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<tr>
<td>18</td>
<td>Dobhdoi</td>
<td>M</td>
<td>n.a.</td>
<td>Private</td>
<td>Heart disease</td>
<td>2500</td>
<td>Sold land or other assets</td>
<td>32</td>
<td>Farmer</td>
<td>1</td>
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</tbody>
</table>
Poor who use private facilities use different coping strategies (viz. a viz. those who use public)

Poor respondents who used private facilities were more likely to report having borrowed money on interest or selling assets. This was the case, for example, for the following respondent who reported total expenditures of Rs. 26,500:

“He (my brother) owns land, which he mortgaged. We paid the money that we got after mortgaging the land. Even today I don’t have any money saved. I roll cigarettes every day and earn money from this. But I spend this money on medicines.” (Respondent 16)

Key differences in coping strategies between urban and rural poor

In the in-depth interviews, respondents from rural areas were more likely to report having borrowed from family members, while those in urban areas were more likely to have borrowed from friends or employers. The following urban respondent, for example, borrowed from neighbours:

“I borrowed some money from my neighbours…And we don’t even have much income so that we can save (to repay this loan). Our neighbours are our best friends…We have not been here for long, however they have been very helpful.” (Respondent 4)

In several cases, the rural poor reported selling or mortgaging land in order to cope with the costs of hospitalization (e.g. respondents 16 and 18) while some urbanites reported selling other assets:

“Sister, what can people like us do? She (Respondent 3) had two gold earrings, and I had to sell off one of these. I got 1400 rupees for the earring.” (Spouse of respondent 3)

Key differences in coping strategies among recent migrants

Recent migrants to urban areas were less likely than permanent residents to report borrowing from relatives. For example, the following two respondents, both long-term residents of Vadodara city, borrowed from family:

“My brother helped me a lot. I bought medicines with the money I borrowed from him.” (Respondent 8)

“We told my cousin about her (Respondent 11’s) hospitalization and he immediately came over. I told him that I would need some money, so he went back and arranged for money.” (Spouse of respondent 11)

In contrast, the following respondents, who had recently migrated to Vadodara city, used other coping strategies:

“We don’t know anyone here, so who would give us money?…All our relatives are back at our village…So we had to sell our belongings.” (Respondent 3)

“I cook at someone’s home. I asked this employer for money to pay for my hospital expenses. They were very helpful…Our employers are (like) our relatives. Our real relatives are far away so they (the employers) are the ones who help us first.” (Respondent 5)

Discussion and conclusions

Summary of findings

Users of public hospitals, in both urban and rural areas, were poor relative to users of private hospitals. Median expenditures per day were higher at private vs public facilities, and this difference was especially marked in urban areas. For hospitalizations at public facilities (both in urban and in rural areas), most respondents were able to pay out of their savings or income; or by borrowing from friends, family or employer. Those using private facilities were more likely to report selling land or other assets as the primary source of coping (particularly in rural areas) and they were more likely to have to borrow money at interest (particularly in urban areas). In-depth interview respondents (those below the 30th percentile of SES) who used public hospitals often did so because of their lower perceived cost. Poor respondents reported using multiple different coping strategies. Respondents from urban areas were more likely to have borrowed from friends or employers, while those in rural areas were more likely to report having borrowed from family members. Recent migrants to urban areas were less likely than permanent residents to report borrowing from relatives, but in some cases were able to borrow from neighbours or employers.

Discussion

Studies that have focused on the costs of inpatient care in India, and the related coping strategies, are relatively few. Consistent with previous studies, the current study suggests that the poor depend predominantly on the public sector for inpatient care. Peters et al. (based on National Sample Survey Organisation data) concluded that the poor rely on public hospitals more than the rich (Peters et al. 2002). For the poorest 25% of the population, 61% of hospitalizations are in public hospitals. Despite this, wealthier populations capture a disproportionate share of public health spending. For example, the richest quintile received more than three times the public subsidy received by the poorest quintile. In part, this reflects the much higher rates of hospitalization among the non-poor—the richest quintile of the population is six times more likely to have been hospitalized (in either a public or private facility) (Peters et al. 2002, p. 219).

On the one hand, use of (nominally) free public health care services is a common strategy for coping, protecting households from potentially burdensome health care costs. This is consistent with findings in other countries where consumers can choose between public and private sectors. Russell, for example, found that “public health care services, free at the point of delivery in Colombo (Sri Lanka) protected the majority of poor households against high direct cost burdens, particularly the potentially high costs of hospital inpatient care and regular treatment of chronic illness” (Russell 2008, p. 112–3). Nonetheless, as is the case in many other low- and middle-income countries, there are significant out-of-pocket costs even at public facilities (McIntyre et al. 2006).

Given the much higher total costs incurred by those using private hospitals, it is interesting that the poorest (particularly in rural areas) do not rely on public hospitals to an even greater extent. The findings suggest that access and quality are among
the main reasons that poorer people turn to the private sector for inpatient care. Many previous studies have found that India’s public health care sector is rife with problems (Peters et al. 2002). Among these problems are poor management, low service quality, staffing limitations (particularly in remote, rural areas), and limited drugs and supplies.

This study finds the median daily hospital expenditures to be almost three times higher among urban than rural respondents, and that this difference is due largely to higher daily expenditures at private hospitals. This is consistent with the findings of some previous studies. For example, the World Health Survey, conducted in 2003, found that the mean annual household expenditure on health care (goods and services) was Rs. 3304 in rural areas and Rs. 6384 in urban areas (World Health Organization 2006b), and the 60th round of the National Sample Survey (conducted in 2004) found that the average cost of a hospitalization was Rs. 6225 among rural respondents and Rs. 9367 among urban residents (National Sample Survey Organisation 2006). The difference found in our study may be explained in part by higher urban incomes. While data are not available for Vadodara district, according to the 63rd round of the National Sample Survey (2006–07) the monthly per capita consumption expenditure (MCPE) was Rs. 797 in rural Gujarat and Rs. 1422 in urban Gujarat (National Sample Survey Organisation 2008). The difference may also be due in part to higher quality (or more intensive) services provided at private hospitals in urban vs rural areas.

This study confirms that people often borrow from friends, family or employers to cope with the direct costs of inpatient care. Borrowing from one’s social networks to cope with medical costs is common in other settings (McIntyre et al. 2006). The current study suggests that the poor in urban areas (including recent migrants) may be more likely to rely on employers or neighbours rather than relatives, but this finding is based on very few observations. This study did not add evidence to Russell’s finding that lower-income households had weaker social networks and could access fewer financial resources (Russell 2008). The findings are, however, consistent with those of Flores et al. (2008), who found that even the poorest households in the poorest districts of India coped with medical expenditures through borrowing and drawing on savings.

Aside from use of public health services, very few survey respondents reported use of formal social protection mechanisms. India’s National Health Policy (2002) encouraged the setting up of private insurance companies and the introduction of government-funded district-based insurance schemes on a pilot basis (MOHFW 2002). In India, 75–85 million people are at present covered by health insurance—approximately 8% of the total population (Mathies and Cahill 2004; Gupta and Trivedi 2005). Social (mandatory) health insurance in India consists of coverage by the Employee State Insurance Scheme (ESIS) and Central Government Health Scheme (CGHS). The private insurance sector has grown tremendously in recent years; the number of people covered under voluntary, private health insurance schemes increased rapidly from 1995–96 to 2002–03, by 29% per annum (Gupta 2004). Community-based health insurance schemes (CBHI) cover only 3 million people (Gupta and Trivedi 2005), although the number of such schemes is increasing. The private and community-based schemes primarily cover hospital care, and are usually subject to caps (i.e. limited indemnity) or deductibles.

The findings of this study suggest that there are several policy options that should be pursued in order to protect the poor from the costs of inpatient care. Governments should invest in improving the quality and access of public first-referral hospitals. This should be done in a selective manner—with a focus, for example, on rural areas and urban slum areas—in order to promote a more equitable distribution of resources. In fact, the Government of India is already making efforts to improve access to quality health care in urban slum areas under the National Urban Health Mission (2008–2012) (MOHFW 2008). Similarly, the National Rural Health Mission (2005–2012) aims to improve health care in rural areas of 18 states deemed to have the weakest infrastructure, in part by strengthening rural hospitals (MOHFW 2005; Mudur 2005). Given that these two schemes are still being implemented, it is unclear how successful they will be.

Efforts must also be made to reduce the cost of inpatient care at public facilities; this can be done in part by ensuring the availability of basic drugs and supplies at first-referral hospitals. Policy makers should continue to explore and support efforts to provide financial protection through insurance mechanisms. The Indian government and individual state governments are indeed pursuing expansions in publicly funded (or subsidized) coverage for rural populations as well as other vulnerable populations. For example, in April 2008, the Government of India launched the Rashtriya Swasthya Bima Yojana (RSBY). This voluntary scheme targets the 300 million people who are below the poverty line. In return for a premium of Rs. 30 per person per year, coverage is provided for hospitalization (either at public or private facilities), capped at Rs. 30,000 per family per year (Bhattacharjya and Sapra 2008). The balance of the premium, Rs. 750 per person per year, is to be borne by central and state governments. By the end of 2009, almost 9 million households were enrolled in the scheme (Ministry of Labour and Employment, undated) though this still represents a tiny proportion of the target population.

Past experience suggests that these efforts must be carefully monitored to ensure that the poorer among the insured are able to access scheme benefits, and that the quality and quantity of health care provided has to be monitored and regulated. In particular, there needs to be further discussion and debate as to whether or not it is a good idea to use public funding to improve financial access to private hospitals (as is occurring under the RSBY). In the absence of systems for monitoring and regulating private hospitals, such schemes risk exposing poor people to care that is unnecessary, of poor quality, or unnecessarily expensive. A study by Ranson and John (2001) documented the problem of unnecessary hysterectomies, often of poor quality, performed on members of a community-based health insurance scheme.

This study also suggests several areas where additional research is required. These include:

- Further study of health care costs in urban areas, to extend understanding beyond the one city studied here;
- Longitudinal assessments of the costs of medical care—both direct and indirect—and coping strategies;
• Documenting interventions that have been successful in improving the quality (or reducing the cost) of care at public facilities, and the factors that have contributed to success;
• Further research—possibly including larger, representative samples—exploring the challenges faced, and coping strategies used, by migrant workers and their families;
• Studies of social networks—for example, how these networks are affected by new, formal risk-sharing mechanisms (like the RSBY) and factors that help or hinder social networks in rapidly expanding urban areas;
• Further studies on strategic purchasing, to ensure that health care purchases by insurers are of acceptable quality and reasonable cost.

Strengths and weaknesses of the methodology
The main strength of the methodology is that it employed both qualitative and quantitative methods. This helped, for example, to ensure that the questions on coping strategies included in the exit survey were culturally and contextually appropriate (as they had been reported by participants in the preceding focus group discussions), and it enabled verification of exit survey findings through in-depth interviews with select respondents. Data on hospital expenditures and coping strategies are likely to have been recalled with good accuracy given that they were collected right at the time of discharge from hospital. This is one of very few Indian studies where investigators have been granted permission to conduct such an exit survey on the premises of both public and private hospitals. Finally, because the exit survey and in-depth interviews purposefully included strata of urban respondents, this is one of very few Indian studies that provide data on coping strategies among urbanites. The study has a number of methodological shortcomings. First, because respondents were identified by exit survey (as opposed to a house-to-house survey, for example) the study excludes those who may have required hospitalization, but who chose not to seek care or who sought outpatient care only. Thus, the study may have excluded the very poor who did not seek care. Second, the exit survey was non-random, and the respondents therefore may not represent the wider population of hospitalized persons in Vadodara district. There is likely to be considerable variation in costs between different private hospitals, so selection of different facilities may have led to different results. Respondents at any one facility were non-randomly selected; respondents were interviewed during the same season and over a period of only a few days, and patients were excluded from the sample if they had used a private inpatient room rather than a general hospital ward. Third, there may be limits to the extent to which study findings can be generalized to other districts or states, given, for example, that Vadodara district is fast-growing and urban relative to many others. Fourth, the exit survey did not explore indirect costs (i.e. loss of household productive labour time and income). And the in-depth interviews, because they were cross-sectional, were more likely to capture fairly discrete and memorable coping strategies (e.g. borrowing from a money lender), and less likely to capture, for example, small reductions in household consumption or increases in time spent in productive labour.

Acknowledgements
We wish to thank Dr V R Muraleedharan (IITM, Chennai) and his team for their support throughout this project. Thank you to Nicola Lord (LSHTM) for logistical support. We thank Dr Amarjeet Singh, Commissioner of Health, Gujarat, for permitting us to carry out the study at the public hospitals. We are particularly grateful to the hospital representatives and staff who gave us support for the exit survey interviews. Also, thanks to the staff of Baroda Citizens Council, who helped us identify recent migrants and conduct focus group discussions with them. We also take this opportunity to extend our gratitude to the Faculty of Social Work, Vadodara who provided work space during the project. Most importantly, we wish to thank the field investigators who assisted in data collection; and all the respondents for sharing their experiences and responding to our questions.

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Conflict of interest
None declared.

Endnotes
1 The poverty line is set for each state, and represents the level of consumer expenditure per capita required to ensure a calorie intake of 2100 per day in urban areas and 2400 per day in rural areas. In 1999–96, it was estimated that 20.5% of Gujarat’s rural population, and 30.7% of the urban population, were BPL.
2 For the purpose of this study, we considered recent migrants as those who had moved from their place of origin/birth (or usual residence) within the previous year (Census 2001). For the purpose of the in-depth interviews, non-migrants were those who had lived at their current place of residence since birth.
3 The latest poverty statistics for India suggest that in 1999–2000, 28.6% of the total population were living below the ‘national poverty line’ (World Bank 2010). We chose to compare coping strategies among the poorest 30% of respondents (vs the less poor 70%) as they might roughly be thought of as representing those who live below the poverty line (vs those who live above the poverty line). This is a rather arbitrary and imperfect cut-off, given that Gujarat does tend to perform slightly better than all-India on measures of poverty (and so is likely to have a poverty line lower than 30%) and, more importantly, given that respondents to the exit survey are not representative of the general population.

References


Appendix 1  List of 26 assets and utilities variables included in the socio-economic status (SES) index, showing responses for each decile (1st being the poorest and 10th being the least poor)

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Deciles of SES</th>
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<tbody>
<tr>
<td>1</td>
<td>Ownership of house</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Housing with brick/stone with cement plaster</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Owns electricity connection</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Gas/kerosene as cooking source</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Own mattresses</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Own cot/bed</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Own wristwatch</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Own fans</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Own radios</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Own television</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Own refrigerator</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Own sewing machine</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Own telephones</td>
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<tr>
<td>14</td>
<td>Own mobile-phones</td>
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</tr>
<tr>
<td>15</td>
<td>Own two-wheelers</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Own tractors</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Own buffaloes</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Own cows</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Own bulls</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Own pada</td>
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</tr>
<tr>
<td>21</td>
<td>Own goats</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Own hens</td>
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</tr>
<tr>
<td>23</td>
<td>Own bullock carts</td>
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<tr>
<td>24</td>
<td>Own shops</td>
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<tr>
<td>25</td>
<td>Own lauri</td>
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<td>26</td>
<td>Total no. of rooms</td>
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<table>
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<th>No. 4</th>
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<th>No. 6</th>
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Private obstetric practice in a public hospital: mythical trust in obstetric care

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\begin{abstract}
There is evidence to suggest the decline of trusting relationships in modern healthcare systems. The primary aim of this study was to investigate the role of trust in medical transactions in Thailand, using obstetric care as a tracer service. The paper proposes an explanatory framework of trust for further investigation in other healthcare settings.

The study site was a 1300-bed tertiary public hospital in Bangkok which it provides two forms of obstetric care: regular obstetric practice (RP) and private obstetric practice (PP). Forty pregnant women were selected and interviewed using a set of guiding questions. A thematic analysis of the interviews was undertaken to generate understanding and develop an explanatory framework.

It was found that patients’ trust in obstetric services was influenced by their perceptions of risk and uncertainty in pregnancy and childbirth, and that these perceptions were linked to their social class. Social class also influenced the accessibility and affordability of care to patients. Middle class pregnant women with relatively high-level concerns about risk and uncertainty preferred using PP service as a means to achieve interpersonal trust. These women thought that an informal payment would provide the basis for interpersonal trust between themselves and the chosen obstetricians.

In practice, however, obstetricians involved in PP rarely acknowledged this reciprocal relationship and hardly expressed the additional courtesy expected by patients. As a result, PP service only created an expensive impersonal trust that was mistaken as interpersonal trust by patients. Negative outcomes from PP often caused disappointment that could eventually lead to medical litigation.

The study suggests that there are some negative impacts of PP within the health system. Negative experiences among PP users may undermine trust not only in the specific doctor but also trust in health professionals and hospitals more generally. Steps need to be undertaken to protect and strengthen existing impersonal trust, which combine institutional trust based on good governance and service quality with trust in the professional standard of practice. The explanatory
\end{abstract}
Introduction

In modern healthcare systems, the traditional, paternalistic doctor–patient relationship is gradually being transformed to a provider–customer or consumerist doctor–patient relationship (Mechanic, 1998) through the application of new public management and market principles (Hunter, 1996). Medicine has been increasingly commoditized and medical litigation, involving confrontation of providers by patients, is increasing in many countries including Thailand (Mechanic, 1998; Wibulpolprasert, Hempisut & Pittayarungsarit, 2002). The changing nature of healthcare systems may undermine the role of trust within them. Yet without a trusting doctor–patient relationship, the healthcare system cannot achieve its goal of improving health in a holistic sense, considering its physical, mental, social, and spiritual dimensions (Mechanic, 1998).

With regard to healthcare seeking behavior, trust has an important influence over the choice of healthcare provider (Balkrishnan, Dugan, Camacho, & Hall, 2003; Hall, Camacho, Dugan, & Balkrishnan, 2002) and is based on beliefs or expectations about how others will behave in relation to oneself in the future (Gambetta, 2000; Gilson, 2003). In addition to monetary incentive, then, trust can be viewed as an important non-financial incentive affecting care providing behaviour (Franco, Bennett, & Kanfer, 2002). It is therefore crucial for policy makers to understand the roles of trust (and distrust) in shaping patients’ experience and their satisfaction.

This study aimed to understand the roles of trust in medical transactions in the Thai healthcare system. It was expected that an analysis of trust (or distrust) in transactions between doctors and patients would provide the basis for developing a conceptual framework to allow better understanding of the roles of trust and other non-financial incentives in healthcare transactions. The conceptual framework developed through this study may be useful for investigating such issues in future studies.

To trust someone is to believe that they are honest, sincere and will not deliberately harm you. In addition to trust, risk and uncertainty also play crucial roles in health care decision-making and medical choices (Kapferer, 1976; Mechanic, 1998). While risk and uncertainty are inherent in sickness and illness, trust can be built and managed by patients and their relatives as well as by providers.

Gilson (2003) categorized trust into interpersonal trust, where two individuals known to each other rely faithfully on each other, while impersonal trust refers to trust in strangers or in a social system. These two forms of trust are dynamic. A stranger may become a known individual, as a result of personal interactions and accessing information by which one can judge how the other will behave in relation to one’s interests. The behavioral characteristics that underpin interpersonal trust include technical competence, openness, concern and reliability (Coulson, 1998; Mechanic, 1998). Alternatively trust in strangers can be rooted in institutions that allow delegated or fiduciary trust to develop. However, trust always involves an element of risk derived from uncertainty regarding the motives, incentives and future actions of another on whom one depends (Coulson, 1998; Gambetta, 2000; Kramer, 1999; Lewicki & Bunker, 1996).

This study investigated trust in obstetric care. We selected obstetric care as the focus of inquiry for three reasons. First, it involves a continual contact between patient and doctor over at least six to ten months. It is possible that the same provider will be used for several pregnancies. Past experiences may also lead to selection of a new provider for each pregnancy. Obstetric care, thus, allows opportunities to build up, or break down, patient-provider trust. Secondly, pregnant women and their social networks have a certain degree of health information and know how to negotiate with providers over decision-making around antenatal care and the childbirth process. Thirdly, there are two different ways in which patients pay their providers for obstetric care in Thailand, namely regular and private practice. Difference in payment mechanism provides good grounds for investigating the role of trust in mothers’ decision-making and for developing a related explanatory framework. In addition, it will allow some initial assessment of how the existence of private practice in public hospital impacts on trust in doctors and the public obstetric care system.

Private obstetric practice (PP) can be described as an informal relationship between a pregnant woman and an obstetrician in which the pregnant woman voluntarily pays money in exchange for personalised obstetric services. These services include the provision of antenatal care, support for delivery and postpartum care by the doctor him/herself. In contrast, regular obstetric practice (RP) does not involve any such special and
personalised agreement. It relies on the general and routine hospital obstetric services, payment for which depend on the patient’s health insurance status and the related maternity benefit scheme.

Both PP and RP are commonly available in public hospitals. PP services are considered a source of extra income for obstetricians. An average public sector salary for an obstetrician was around 20,000 Baht per month in 2003\(^1\) while the financial income derived from private practice was generally 3000–5000 Baht per birth for an average of 20–80 births per month. The financial income derived from PP may, therefore, significantly boost doctors’ income given the relatively low level of public sector salaries.

In Thailand, there are approximately 800,000 births each year. More than 95% of births take place in hospital (Health Information Center, 2001). Public hospitals serve as the main provider of antenatal, intrapartum and post-partum services. In 2001, 41% of total deliveries took place in Ministry of Public Health (MOPH) district hospitals, 34% in MOPH provincial hospitals, 18% in other public hospitals and only 7% in private hospitals (Teerawattananon, Tangcharoensathie, Srirattana, & Tipayasoti, 2003). A 1998 survey of private practice in 29 MOPH provincial hospitals showed that 37% of all public hospital deliveries involved PP (Hanvorawongchai, Lertiendumrong, Teerawattananon, & Tangcharoensathie, 2000). However, the financial gains to providers resulting from PP may encourage its growth both for obstetric care and for other specialties. It is, therefore, crucial to understand if and how PP affects patient trust in providers and the health system more generally, in order to formulate further policy development.

Methods

As trust is a relational state, its investigation requires an in-depth analysis of people’s relationships and interactions considering, for example, how patients feel and what they expect from their doctors and how both of them behave in relation to each other. Such investigation is most effectively undertaken through an interpretive analysis of patients’ narratives of their obstetric encounters. Through the examination of patients’ stories, trust-related words or themes can be identified and used in the construction of an explanatory framework. This study, therefore, applied a qualitative approach, involving thematic analysis of in-depth interview data.

The study site was a well-known 1300-bed MOPH tertiary hospital in Bangkok, which had celebrated its 50th anniversary just before the study. Originally providing only maternity services, the hospital has now expanded its services to include all other specialties. However, obstetric services remain particularly important. Thirty-six percent of all in-patients attend for obstetric care and the hospital carries out approximately 45 deliveries a day.

The hospital’s catchment area is extensive, 55% of all patients being Bangkok residents and the remainder are migrant workers and cases referred from other hospitals. It has a well-established residency training program in all specialties. It also provides training for medical and nursing students in collaboration with other colleges and universities. Private obstetric practice is informal and has been commonly practiced for decades (indeed, two of the PP users mentioned that their mothers had PP services some thirty years ago at this hospital), with the PP fee changing over the time.

During December 2002, 40 pregnant women, with at least one childbirth, attending the antenatal clinic (ANC) were randomly chosen. Informed consent was obtained before recruitment. Choosing informants with previous pregnancy experience allowed us to study experiences on previous pregnancy and childbirth. An in-depth interview using a guiding list of questions was conducted in private in a comfortable room close to the ANC clinic by one of the researchers. Each interview took about 60 min and was tape-recorded, with permission. This was subsequently transcribed. Home telephone numbers were obtained in case further interview was needed.

Interview sessions were conducted in an informal manner. The informants were invited to describe their experiences on pregnancies and childbirths in their own narratives. Interviewer would ask questions to elicit further information to cover the following key areas: demographic and socio-economic data; general perceptions of pregnancy and childbirth; fear, worry or anxiety; expectations; past experiences of obstetric services; clinical outcomes and satisfaction. Informants’ use of PP or RP was identified for the current and previous pregnancy. Those mothers with PP experience were specifically asked to describe: (1) the process by which they engaged in PP, (2) the reasons and factors influencing their decision to use PP, and (3) their understanding of trust (distrust) in the chosen obstetrician.

Those mothers with RP-only experience were also asked: whether they knew about PP; if so, why they did not choose PP service; and their opinions on private practice. By the end of the interview when informants became more comfortable, all informants were invited to disclose their feelings and opinions on their doctor–patient relationship; whether they made gratitude payments, either in cash or in kind; or provided any other forms of non-material reciprocity. In two final

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\(^1\)Exchange rate 42 Baht per dollar in 2003.
questions, we asked our informants to describe the level of trust in their choices of PP or RP. For those having PP experience, they were asked if they would engage in PP again and/or would recommend their friends to do so. In addition to interviewing pregnant women, a few referring nurses, obstetricians and other staff working in ANC and the labor room were also informally interviewed about their perceptions and practices related to RP and PP services.

The meanings of trust were examined by identifying groups of associated words and phrases in Thai that have a closely related meaning to trust: for example, confidence (chueymun), being assured (munjai), sense of security (rusuek ploudpai), certainty (naenon), belief (chuey), reliance or dependence on (the obstetrician) (laewtae mow). The themes that were commonly found and emerged from a majority of cases were further analyzed in order to develop the explanatory framework of trust.

Results

Service arrangement in the hospital

In the hospital studied, all ANC visits were seen by an obstetrician. While PP cases were always seen by their chosen doctors, the RP cases were seen by the obstetrician in-charge on the day. The premises and basic amenities available for labor and delivery were similar for both groups. In labor, PP cases were normally attended by in-charge nurses and were frequently visited by their personal obstetricians. The use of PP service implied that the whole delivery process would be conducted by the chosen obstetrician. The fee paid for PP services ranged from 3000–5000 Baht, based on informal agreement between patient and provider. This fee was not covered by medical insurance.

RP cases were normally attended by the obstetric nurse in-charge of the day and deliveries were assisted by any one of the available nurses. An episiotomy could be done by a nurse-teacher or obstetric resident or obstetrician on duty whilst suturing of the perineum would only be done by the resident or obstetrician on duty. A consultant obstetrician was available for complicated cases, if called in by the attending nurses. The principles and guidelines of clinical services as well as the availability of basic and advanced obstetric equipment provided to patients using the RP system was similar to those using the PP system.

Socio-demographic profile

The socio-economic profile of our sample is described in Table 1. Fourteen out of forty cases had used the PP service for at least one childbirth, and 26 had experience of RP. Among the 40 informants there were 43 events of completed pregnancies and childbirth.

Compared to RP users, those patients choosing PP were generally older, more highly educated, earned higher incomes, owned their own homes, were employed with permanent jobs and entitled to medical benefits such as the Civil Servant Medical Benefit Scheme and Social Security Scheme. There were more unemployed housewives among RP users. A higher proportion of RP

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Sample Characteristics</th>
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<tr>
<td>PP (n=14)</td>
<td>RP (n=26)</td>
</tr>
<tr>
<td>Mean age (year)</td>
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</tr>
<tr>
<td>Parity including this pregnancy (%)</td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td>64</td>
</tr>
<tr>
<td>Third</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
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<tr>
<td>Education (%)</td>
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<tr>
<td>Undergraduate</td>
<td>29</td>
</tr>
<tr>
<td>Graduate</td>
<td>29</td>
</tr>
<tr>
<td>Occupation/insurance coverage (%)</td>
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<tr>
<td>Private employee</td>
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<td>Own account work or self employed</td>
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<tr>
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<td>&gt;30,000</td>
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<td>Bangkok</td>
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*Government employees and their dependents such as parents, spouse and children are covered by the Civil Servant Medical Benefit Scheme on a fee for service basis. Their medical expenses are fully reimbursed.

Private employees are covered by the Social Security Scheme, which provides a lump sum reimbursement of 4000 Baht per confinement.

Own-account workers and self employed are not covered by Social Security and pay out of pocket for care.

This group is covered by the recent universal health care coverage scheme, which includes a flat rate, capitation fee for ambulatory care and a case-based payment fee within a global budget for hospital services.
Users were migrant workers whose hometown was outside Bangkok.

Concerns and aspirations

Although all respondents viewed pregnancy and childbirth as natural processes they also expressed serious concerns about the risk and uncertainty of the events. Tracing the words “fear” or “afraid of” and “worry” or “anxiety” throughout the narratives indicated considerable concerns over the risk of newborn abnormalities, labor pain and difficulties, prolonged delivery processes, injuries and bleeding, and life threatening experiences for both mother and child. The most common concern was the risk to newborn abnormality, as many respondents said,

I am very much afraid that my baby will not be krob-sam-sib-song. I think only obstetricians and technologies can help to prevent or ensure early detection of the problems for proper management.

Anxiety and serious concerns about having a healthy baby were more strongly identified among PP users. These mothers often requested additional services and technological interventions. For example, some PP users said that because of anxiety about their newborn’s health they sought reassurance by attending the ANC clinic early and regularly, as well as seeking frequent ultrasonographies and an amniocentesis test. A few mothers also expressed apprehension about labor pain and wanted a quick response to their requests for analgesia by having a particular provider to count on. In general, these strong concerns about safety and risks had driven PP users to seek the best care by employing obstetric specialists particularly in PP service.

The interviews also reveal that while PP users saw cesarean section as important in assuring a safe delivery, RP users were generally more hesitant about this medical intervention. They often mentioned that many pregnant women delivered babies every year without any problem. They felt that if they were healthy, attended antenatal visits regularly and strictly followed the doctor’s recommendations, any abnormality and problem would be detected at an early stage. RP users strongly believed that the hospital and personnel in-charge had the capacity to manage any problem with regard to their pregnancies. For these women, additional services were, therefore, considered unnecessary.

Moreover, it was noticed that although many had migrated to work in Bangkok, 19 out of 26 RP users were still bound to their traditional kinship networks and had strong communal ties with their hometowns. They usually attended the ANC clinic in Bangkok, but at around the 8th month of pregnancy, they would return to their hometowns, carrying their ANC records with them, to deliver their babies. Important reasons for returning home for childbirth were the availability of social support and their preference for the traditional postpartum care provided by their parents. Two RP users expressed the following typical accounts:

Last pregnancy, I continued my work until the 8th month of pregnancy. My father came to take me back to give birth in my hometown. My parents, especially my mother, were quite worried about me. They were afraid that the baby and me would be at risk. They also went to a shrine and prayed for my safe childbirth.

I would like to give birth in my hometown, especially for the first pregnancy, where my mother lives, since I will be able to “yu faii” (stay in a fire place) for fifteen days and during that time my mother would look after my baby.

Most of the RP users that did not return to their hometowns were in their second pregnancies and had prepared to have their mothers come to stay with them in Bangkok.

Overall, most informants accepted that in modern medical encounters patients and doctors were almost strangers to each other. In line with Benoliel’s findings (Benoliel, 1993), our study suggests that patients felt they were powerless and lacked confidence to voice their problems or to request information, reassurance or any specific care from their physicians. They were uncertain if the system would respond satisfactorily to their needs, and so felt they could not fully trust in such a system. PP users who expressed strong concerns over risk and uncertainty sought an adequate level of reassurance by attempting to establish an interpersonal relationship with a chosen obstetrician. RP users, in contrast, relied more on the support of their traditional and kinship networks.

Expectations of care

All pregnant women we interviewed expressed their desire to maintain their autonomy in their pregnancies and childbirths. They not only sought clinically competent providers but also specifically chose providers who they considered reassuring and responsive to their felt needs. These findings confirm that interpersonal trust

\[3\] “Krob-sam-sib-song” means a person who has no physical abnormalities nor is missing any body parts.
Determinants of the PP service

The process of seeking PP services began with strong concerns about the risk and uncertainty of pregnancy and childbirth. The concerns of risk and uncertainty drove pregnant women, on the one hand, to demand higher quality of care and, on the other hand, to seek greater control over their situations. Feeling that regular services could not provide a satisfactory level of response to their needs, they sought PP services by first choosing an obstetrician on whom they could count. In choosing their obstetrician, PP users sought information and advice from friends or relatives who previously had PP experience. RP users, in addition to their limited ability to pay an extra expense for PP service, were short of information regarding PP options.

However, poor experience of either type of care had a strong influence on whether they chose the same care in a later pregnancy. Three respondents who had previously used PP services had changed to RP services for the current pregnancy due to problems experienced in the past. These problems included the doctor: arriving late for the delivery without a satisfactory explanation; suggesting a cesarean section against the mother’s wish (who subsequently had a normal vaginal delivery); setting the time and date for induction of labor or an elective cesarean section at his own convenience without asking the mother’s opinion. A mother’s decision to change from PP to RP seemed to indicate her inability to maintain her autonomy or fulfill her expectations.

Four past RP users had changed to PP care for their current pregnancy. Bad experiences of the regular obstetric systems in other hospitals, such as the death of the baby and failure to diagnose an ectopic pregnancy, were reasons for the change. These mothers felt more confident under the PP system. However, affordability was also an important enabling factor in two cases where the mothers now had more money and so could better afford PP than in the past.

Answers to the interview questions confirmed that PP users who were satisfied with the outcomes of their experiences of care trusted their choices and would not change service type in the future. They said they would recommend this option to friends and relatives. In contrast, although most RP users expressed satisfaction with the services they had received, it seemed possible that there may be a trend of shifting to PP when and if increased income level allows.

Discussion

Trust in health care is a comparatively new area of inquiry. The aim of our research was to build a better understanding of various aspects of trust. The proposed framework is shown in Fig. 1 below. We found that perceptions, values and concerns about risk and uncertainty among healthcare users were important attributes differentiating trust in obstetric encounters. Trust was differently conceived by different groups of users and the roles various forms of trust played in the doctor–patient relationship were different between private patients and regular patients.

Since PP involved a relatively large amount of additional expense, ability to pay was an important determining factor for mothers who sought private care. Most PP users who found the private care affordable can be said to belong to the middle class stratum which has steadily expanded since Thailand’s rapid industrialization in the latter half of the 1980s. This newly constituted middle class (MC) has been defined as an intermediate hub between the capitalist and the working class (WC) in Thai society (Piriyarangs and Phongpanichit, 1993). The Thai MC stratum can be divided into two major groups: the businessmen who mostly rely on the market for their wealth accumulation, and the professionals and white-collar workers characterized by high levels of education, or non-manual workers who rely on their professional skills and expertise for social mobility.

As described by Piriyarangs and Phongpanichit (1993), the Thai MC subculture has an inclination toward an individualistic worldview. They usually place a high value on education and base their decisions on systematic calculation and economic rationality. As their cultural worldview is also strongly influenced by the ruling class’s concepts of merit, patronage and power (or boon, baramee, and amnat in Thai), they are not only more assertive and self-determined but also less committed to the idea of social equality (Aewsiwong, 1993).

As shown in Table 1, the characteristics of PP users, such as high education, white-collar work and high income, suggest that they belonged to the middle class, while RP users fell within the working class stratum. In addition to ability to pay, which enabled middle class mothers to attain private care, middle class cultural perceptions and values also played a determinant role in the decision to choose PP. Not only were PP users, with their higher education, more trustingly confident in specialist care and advanced medical technology, but also they were more assertive, self-determined, and wanted to be in control of their perceived risk and uncertainty.

As the accounts in our findings also indicate, their middle class view and value was also evident in the belief...
of most PP patients that their engagement in PP was economically rational. As one PP case told us, "...my doctor told me a fee of 5000 Baht for his service, I thought it was affordable for me. It was not expensive compared to expenses in private hospital." While another said, "...spending 5000 Baht for the safety of my baby and myself was worth spending. I was not pregnant that frequently."

In contrast, RP users were bounded by a different cultural background. Instead of middle class individualism, the working class maintained traditional communal connections even after they migrated to urban areas for job opportunities (Piriyarangsang & Phongphanichit, 1993). Most RP users interviewed in this study maintained strong ties with their traditional social network, friends and relatives, even whilst they worked in Bangkok. As various accounts in our findings indicate, maternal and child-care was traditionally viewed as a collective activity to be managed and assisted by parents and members of extended families in their community settings.

It is clear from the findings that RP users did not rely entirely on professional and institutional care. The traditional knowledge and warm communal interaction formed a supportive system that gave them confidence. Such communal support means that it was more likely for them to return home for their obstetric care than to engage in PP care. Their use of RP services was, thus, partly based on their comparatively lower expectation from healthcare care system. However, it should also be noted that since RP users belonged to a different social class to the obstetricians. They sometimes felt alienated and unable to bridge the class divide gap. With strong support from their family, relatives and friends who belonged to the same social class, the working class mothers were able to limit their interaction with the hospital and professional system to as little as clinically necessary. For RP users, perhaps the basic trust in the hospital system in conjunction with their trusting social support system was adequate to reinforce their confidence in times of uncertainty and risk.

The dynamic interplay of trust and the myth of interpersonal trust

As Fig. 1 outlines, this analysis of transactions in obstetric care suggests that pregnant women viewed trust in obstetric services at two distinctive levels: (1) trust in the health care system (including trust in the hospital and professional competency) and (2) trust in a particular person in-charge of caring.

In this study, all respondents knew about the reputation of the hospital and their basic trust in the hospital led them to choose its services for their current pregnancies. This level of trust in the hospital can be seen as a basic condition for seeking care. In addition, there was also trust in clinical competency, as expressed by the common preference for an obstetrician (with higher levels of training and licensing) rather than a
general practitioner or a nurse. Together these two categories of ‘basic trust’, namely trust in the hospital system and trust in professionals, are derived from a sense of assurance external to personal familiarity. This basic trust can be called institutional or impersonal trust (Gilson, 2003).

Trust in a particular person in charge of caring involved some combination of impersonal and interpersonal trust. Among RP cases, most patients trusted the persons in charge without knowing them personally. PP cases, however, assumed that by offering additional payments to an obstetrician they would be recognized and would develop a personal relationship with their doctors. This interpersonal trust represents the second level of trust identified by respondents.

However, PP users’ expectations of an interpersonal relationship were often not met. By offering a financial incentive PP users hoped to open the door to an interpersonal relationship with their obstetricians, ensuring that the obstetricians would be honest, sincere, and do their best to serve the patients’ best interests. However, in practice, three sets of experiences suggested that the interpersonal trust perceived by PP users might only have been an expensive impersonal trust mistaken as interpersonal trust.

Firstly, most PP users said they had never known their chosen doctor before. In other words, there had not been initial interpersonal relationship. Most obstetricians chosen by PP users were suggested by the patients’ friends or relatives. As the quote below indicates, most PP users were kept at arm’s length during the course of their encounters, and never got a chance to be acquainted with their obstetricians.

It was a suggestion by one of my relatives. When I asked to be his private case, the obstetrician did not say any words of acceptance. He just nodded and wrote his name and phone number on a corner of my ANC record.

Secondly, even by the end of their pregnancies most obstetricians remained strangers to PP users, and vice versa. Although the interactions between doctors and pregnant women lasted over a period of more than 6 months, each interaction involved only a short visit to the hospital, too short to build up interpersonal trust. Not surprisingly, two PP cases indicated that when they met the doctors who had attended them as PP users the previous year, the doctors could not remember them.

I was given the doctor’s telephone number and was told that I could call him for a consultation when I felt I needed. But I dare not call him because I was afraid I would be disturbing him too much. When I saw him at the ANC, most of our conversation was about obstetric care. There was very little courtesy and the short encounter couldn’t make us familiar with each other.

Third, the doctors viewed their relationship with PP users as an ordinary professional matter and rarely acknowledged any agreement, or expressed particular courtesy in these relationships. This asymmetrical relation could be viewed as a “negative exchange” (Kapferer, 1976) in which PP users explicitly committed to provide financial incentive to the obstetricians but the obstetricians neither acknowledged nor acted in reciprocity. This meant that while the obstetricians could be certain that they would be paid an additional fee, the PP users could not shore up their confidence and thus still experienced some degree of uncertainty regarding the reliability of the doctors.

Overall, although PP respondents may have felt that they had trusting, interpersonal relationships with their chosen doctors, the limits on these relationships suggest that all pregnant women, PP and RP users, eventually ended up relying more on impersonal trust. The financial incentives involved in PP simply did not provide an adequate basis for building interpersonal trust. Given also that there is wider evidence to suggest that financial incentives may even undermine trust (Hunter, 1996), this study suggests that it is important to develop the mechanisms that can strengthen impersonal trust. These include professional control, an accreditation system, and the enforcement of ethical codes (Mechanic, 1998).

The impact of private practice on the healthcare system

Both the negative and positive patient experiences of PP may reflect deeper structural problems within the health system as a whole. The negative experiences of PP led to distrust in the obstetrician. The following instance from a PP user is illustrative:

“When my pregnancy was near term, the doctor told me to deliver before the New Year day, as he would not be around during holidays. I did not come as appointed because I did not have a labor pain. My labor pains started on the second of January during that long holiday, but my doctor did not come to attend immediately as I expected. Two days later in the labor room, a nurse delivered my baby and my doctor just came at the end to suture the perineum. There was not a single word of apology from him. However, I paid for his PP fee since I felt that I had promised to pay him even if not in words. No more PP for me.”

Given the high expectations of PP patients, the impacts of any negative experiences with PP will be exacerbated when there are serious complications, such as injuries, disabilities or fatalities. Such outcomes have
negative repercussions on trust in the hospital where the obstetrician works, and the wider healthcare system.

The positive outcomes of PP may, however, also have negative impacts on the healthcare system. As the use of PP services mostly begins with advice or suggestions from friends or relatives, positive experiences of PP can encourage more patients to engage in this practice. But as a doctor’s time is a finite resource, it is likely to be impossible for a doctor to provide better care for his/her private patients while maintaining adequate care for complicated RP cases. There is a real danger that two-tier care will result.

It is noteworthy that among patients there were conflicting opinions about private obstetric practice. Some endorsed it as a personal right as long as it was affordable. Others opposed PP on the grounds that it would lead to unequal access to public resources, with the obstetricians acting as gatekeepers. As doctors in state hospitals are fully paid by the public sector, additional payments for privileged access to PP care were seen as similar to a bribe and, thus, as an unethical or corrupt practice. The practice was left unperturbed partly because most PP users preferred to keep it informal, while the doctors gained their extra income without any formal obligation or acknowledgment.

It is possible that the continued provision of unregulated PP services may undermine institutional and professional trust. When the outcomes of PP service are less than satisfactory, the patients may become disillusioned not only with a particular obstetrician but also with the hospital which allows PP in the first place, undermining the basic trust in the whole healthcare system.

Conclusions

This study illuminates the important role of trust in the health care seeking behavior of pregnant mothers in Thailand. Two levels of trust are important: impersonal trust in the hospital or healthcare system and interpersonal trust rooted in a personal relationship. Among the middle class mothers, attaining inter-personal trust is the main motive underlying their obstetric care seeking behavior. Their ability to pay and the fears and anxieties about childbirth lead them to offer obstetricians an informal fee in return for personalised care (PP services). Working class mothers who are more content with regular obstetric care (RP services) rely on an impersonal trust in the hospital standard care. They also receive additional support during childbirth from their traditional kinship networks, and can neither pay for private care nor feel able to bridge cultural gap between them and the obstetricians.

Even among PP users, the interactions they have with their obstetricians are usually inadequate to provide a strong basis for a trusting, personal relationship. Although the unofficial financial payment associated with PP is intended to provide a foundation for interpersonal trust, the doctors involved rarely acknowledge or commit themselves to the reciprocal relationship. The interpersonal trust associated with PP services, if any, is, therefore, quite fragile.

Our findings also suggest that the presence of private practice in public hospitals could have serious negative repercussions for healthcare generally. Positive private experiences might lead to an expansion of private practice not only in obstetric care but also in other specialties. As private practice expands, doctors are unlikely to be able to manage their time to ensure fair treatment of both PP and RP users. Negative PP experiences may not only erode trust in a particular doctor but also in professionals and the hospital system. Finally, financial payments may undermine genuine reciprocities, sincere expressions of gratitude, and the maintenance of societal non-monetary value within the healthcare system.

Given the fragility of interpersonal trust in the current context and the potential negative impacts of private practice for impersonal trust, we suggest that steps must be taken to protect and build the current levels of impersonal trust in Thailand’s obstetric services. We specifically recommend that the two components of impersonal trust must be strengthened: namely organizational or hospital trust through hospital quality accreditation process and trust in healthcare professional institutes to function as a regulatory control body of medical ethical conduct. Although it is difficult to stop private practice completely in public hospitals, policy makers and hospital administrators must develop guidelines to limit the extent of private practice allowed, and so ensure social accountability to users of the regular services. In promoting trust in the healthcare system, account must be taken not only of the sociocultural characteristics of patients and providers, but also of the organizational cultures of hospitals, which strongly shape provider-patient interactions.

Further investigation of trust in health care settings is required to provide a stronger foundation for policy guidance. We hope that the explanatory framework developed here can be applied more widely in other specialties and settings. The future research agenda around private obstetric practice includes generating greater understanding about obstetricians’ trust in patients and hospitals, the magnitude of reciprocity in private practice, and consideration of how to contain or prevent the negative impacts of private practice. At a more general level, further studies are needed to understand the role of trust at different healthcare levels (primary, secondary, and tertiary care) and in different healthcare settings (rural, urban, local cultural orientation), as well as perceptions of trust among healthcare...
providers and healthcare administrators. Understanding the process of trust formation and factors that could undermine trust will also be important in strengthening non-financial incentives in the healthcare system.

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System dynamics approach to immunization healthcare issues in developing countries: a case study of Uganda

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This article critically examines the challenges associated with demand for immunization, including the interplay of political, social, economic and technological forces that influence the level of immunization coverage. The article suggests a framework to capture the complex and dynamic nature of the immunization process and tests its effectiveness using a case study of Ugandan healthcare provision. Field study research methods and qualitative system dynamics, a feedback and control theory based modelling approach, are used to capture the complexity and dynamic nature of the immunization process, to enhance a deeper understanding of the immunization organizational environment. A model showing the dynamic influences associated with demand and provision of immunization services, with the aim of facilitating the decision making process as well as healthcare policy interventions, is presented.

Keywords
causal loop diagrams, healthcare services, immunization demand, immunization healthcare, system dynamics, Uganda

Introduction

Stagnant and falling immunization rates in most sub-Saharan African countries have resulted in renewed international attention, and the effectiveness and sustainability of immunization programmes have become key issues of policy debate [1]. Increasing immunization coverage to prevent childhood diseases is an important developmental issue [2–5] and an area of critical research [6–11].
In a study to evaluate new trends and strategies in international immunization, Martin and Marshall [12] suggest that ‘failure to immunize the world’s children with life saving vaccines results in more than 3 million premature deaths annually’. There is an urgent need to improve immunization coverage around the world. The World Health Organization has targeted measles for eradication in several regions of the world by the year 2010 but, despite an effective vaccine, there are still estimated to be 30–40 million measles cases and 800,000 deaths per year [13]. In Uganda, despite numerous immunization campaigns through the media, health visits and improved health services, coverage rates are generally still low (less than 60%) [13].

Various approaches have been applied to understand immunization coverage problems. However, there are still acknowledged deficiencies in these approaches, and this has given rise to research into alternative solutions, including the need to adopt new technologies to address the imbalance between immunization demand and provision of health services. Understanding of the immunization coverage system and its problems may be helped through system dynamics methods [14]. System dynamics provides us with tools which help to better understand difficult management problems such as faced by the immunization programme in Uganda.

**Background to immunization coverage in developing countries**

Preventable childhood diseases such as measles and premature deaths still occur, particularly in the developing countries, due to low immunization coverage [5]. According to the World Health Organization (WHO) [15], global coverage for measles immunization stands at 77 per cent. In 2005, 28 million infants worldwide had not been vaccinated with DPT3 (diptheria pertussis tetanus, third dose), with 75 per cent of these being in developing countries. Immunization coverage is lowest in poor countries and among poor populations such as Africa and Asia [16]. Globally, it was reported that the goal of fully immunizing 80 per cent of the world’s children was reached in 1990; however, coverage in Africa for that year was 55 per cent. The United Nations Children’s Fund (UNICEF) and the World Health Organization [17] further state that immunization coverage rose significantly since the launch of the expanded programme for immunization in 1974, from less than 5 per cent of the world’s children in the first year to around 76 per cent by the end of 2003. Governments, donor agencies and projects have made contributions towards the improvement of immunization rates through the improvement of health infrastructure, financing, supplies, staffing and management of national immunization programmes.

Figure 1 shows the immunization coverage rates in Uganda over time. In Uganda, BCG immunization rates are higher than those of polio 3 (polio, third dose), measles and DTP3 due to the fact that BCG is administered at birth, while the rest are administered after some weeks as scheduled. There is a general upward trend in immunization coverage rates which is sustained by continuous campaigns to challenge negative responses towards immunization.

**Research design**

The study employed the dynamic synthesis methodology (DSM) developed by Williams Ddembe which combines two powerful research strategies: system dynamics (SD) and
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Combining simulation and case study methods is beneficial in that the case study enables the collection of on-site information about the current immunization system, owners and user requirements and specifications used to develop the generic model.

The system dynamics methodology illuminates key principal effects such as exogenous shocks, systemic feedback loops, systemic delays and unintended consequences typical of the immunization system as follows:

1. The immunization system presents exogenous shocks (factors external to the system), such as changes in demand for immunization (which may occur as a result of immigration) and the emergence of epidemics such as measles.

2. The immunization system contains feedback loops, communication paths and methods that impact behaviour. A feedback loop is a control system where the output of the system is fed back into the system [19]. For example, immunization knowledge enhances utilization of immunization services which in turn results in more knowledge.

3. The immunization system has systemic delays (time lags) which develop over time in response to internal and external influences. Examples of such delays are those arising from delivery of health services and cold chain maintenance (ensuring that vaccines maintain the right temperature during distribution), especially to rural communities, as well as delays in uptake of immunization.

4. Policy changes, feedback loops and Behavioural changes in the immunization system result in both intended and unintended consequences which can be investigated using the SD methodology.

The problems faced by the nation’s immunization system policy can be interpreted in terms of the information, actions and consequences which the system dynamics viewpoint presents [20–23]. The research design is shown in Figure 2.
In order to understand factors that influence immunization coverage and their relationships, survey research supported by semi-structured interviews was conducted to understand the intricate information flows, delays and other competitive challenges. In stage 1 (Figure 2), information related to immunization issues and associated problems was initially collected from related literature and documents. Management and staff of the national immunization programme (UNEPI) and Mukono District Health Services were interviewed in order to establish the current problems faced by delivery and uptake of immunization services. Field studies were used to determine the full range of activities and challenges associated with immunization coverage (stage 2). Data obtained from the study were analysed with the SPSS statistical package (stage 3). The factors affecting immunization coverage, as well as national immunization policies used for immunization coverage, were critically analysed and used to develop causal loop diagrams (Figures 4 and 5) using Vensim modelling software. The causal loop diagrams were presented to stakeholders for comments and improvements. Feedback from consultations was then used to develop the quantitative model. Stage 4 involved empirical investigation into the current Ugandan immunization healthcare services. Data obtained from the empirical investigation was used to populate the model. Stage 5 involved scenario modelling and testing of various policies as well model validation. Stage 6 involved the proposition of
intervention strategies towards improvement of immunization coverage. Key information and processes required for immunization coverage improvement were derived.

**Field studies**

Field studies were carried out to determine the full range of activities and events that are associated with immunization coverage, and to examine the various acknowledged factors associated with the provision and utilization of immunization services [24]. The study was both qualitative and quantitative. The study was carried in Mukono district which lies in the central region of Uganda. Mukono was selected as the area of study since it has a good mix of both rural and urban populations. The people of Mukono district reside both on the islands (one county) and the mainland (three counties) and the population consists of more than 18 tribes. Data were collected through interviews using semi-structured questionnaires from various stakeholders interested in the current immunization system: mothers, health workers, district health officials, implementers of policy (UNEPI), policymakers (government) and community leaders. Field observation of some activities was also carried out, and other sources of data, especially those that would be able to highlight historical, social, political and economic contexts, were collected.

**Mothers.** In each county of the selected district, 200 mothers were interviewed. A multi-stage sampling method was used to define a target sample size of 800 mothers. The sample size was determined as follows:

\[ n = \left( \frac{z^2 p q}{e^2} \right) \]

where:

- \( n \) is the required sample size.
- \( z \) is the standard normal deviation corresponding to the level or degree of confidence selected. Two confidence intervals normally used for the population mean are 95 and 99 per cent. This study selected the 95 per cent confidence interval as suggested by Hutchins et al. [25]. For 95 per cent confidence interval, \( z = 1.96 \).
- \( p \) is the fraction of population normally covered by immunization, i.e. 0.7.
- \( q \) is the fraction of population not covered by immunization, i.e. \((1 – p) = (1 – 0.7) = 0.3\).
- \( e \) is the error caused by observing a sample instead of the whole population or the permissible error which is less than or equal to 10 per cent.

Hence \( n = 80.7 \). Taking into account a non-response rate of 20 per cent, this gives a figure of 100 respondents. A design effect consideration resulted in 200 \((100 \times 2)\) respondents for each county, thus making the number of respondents in the four counties equal to 800. In each county, the planned number of interviews was at least 200 mothers. A structured questionnaire was used.

**Health workers.** Three private and five government health facilities were selected by simple random sampling from the district. Those that were selected included one government hospital and one private hospital, and the rest were health centres and dispensaries. At each sampled health unit, two people were interviewed, one vaccinator and one officer-in-charge of vaccines; this brought the total interviewed to 16.
Officials. At the district level, several meetings with various officials from the health and administrative services were held. Local community leaders and national officials, as well as consultants with UNICEF, were interviewed.

Data analysis

A thematic approach was used to compile and analyse the qualitative data. Socio-economic and demographic variables were treated as independent variables, while attitudes and knowledge were treated as both dependent and independent variables. The data were analysed using SPSS 10.0 for Windows. The analysis employed descriptive statistics, including frequencies, percentage distributions, cross-tabulations and correlations. Cross-tabulations were used to further analyse the data by considering a combination of information on two or more variables.

Analysis of the Ugandan immunization system

Healthcare services in Uganda, including immunization services, are provided through a decentralized system consisting of geographically spread health centres and regional hospitals which are categorized into health districts and health subdistricts. A system diagram, a high level map showing the overall architecture of the immunization system, was developed as shown in Figure 3.

The immunization system diagram shows four key subsystems which are explained as follows:

1. The immunization management subsystem is responsible for the management, monitoring and supervision of immunization services at the national level. Collaboration with the government/donor agencies effects proper budgeting and flow of funds. Management ensures that vaccines are ordered and delivered to the vaccines management subsystem for distribution.

2. The vaccines management subsystem is responsible for the management and delivery of quality vaccines to the healthcare service subsystem for distribution to the districts and health facilities. This involves maintenance of vaccine efficacy which is done by ensuring that the vaccines are kept at the right temperature.

3. The healthcare service subsystem is responsible for the provision of immunization services to the population. The health service is concerned with the management of resources (health workers, vaccines and equipment) as well as providing health education to the community.

4. The community subsystem represents the population that utilizes the immunization services. The community is obliged to take the children for immunization, follow the immunization schedule and report any incidences concerning immunization.

The key external agents (outside the boundary) include the government and donor agencies that provide the funds necessary to run the immunization programmes, the vaccine manufacturing organizations, and the community leaders who carry out mobilizations in the communities.
The system diagram conveys information on the boundary and levels of aggregation in the model by showing the number and type of different organizations or agents represented. Key processes and flows of information are shown. However, the diagram does not show the influences and causality which provide a deeper understanding of the immunization system.

**Causal loop diagrams**

Causal loop diagrams (influence diagrams) are circular chain diagrams of cause and effect which are used to represent relationships between variables which are often difficult to
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describe. A relationship between two variables is represented by an arrow showing the direction of influence. A positive sign on a link implies that a change in one variable results in a change in the same direction, whereas a negative sign denotes a change in the opposite direction. A feedback loop occurs when arrows connect a variable to itself through a series of other variables. A feedback loop may be reinforcing (R) or balancing (B). A reinforcing loop is defined as a positive feedback system that represents a growing or declining action, while a balancing loop is a negative feedback system that is self-regulating [26].

Findings from the field study, as well as immunization studies of other researchers [3, 5, 7, 27], are represented in the causal loop diagrams of Figures 4 and 5. The figures show the factors associated with demand for immunization and the provision of healthcare services, as well as the key issues that need to be taken into consideration.

Figure 4 illustrates the intricate and complex relationships among factors affecting immunization coverage from a parental participation perspective and a number of feedback loops which may help to explain different immunization coverage levels [28]. It is this feedback structure that gives rise to complexity, non-linearity and time delays in immunization coverage.

Figure 4 presents two balancing loops B1 and B2 and one reinforcing loop R1. Loop B1 is a balancing loop which shows that, with increased level of awareness, the demand for immunization increases, which increases the number of children immunized, thus creating a herd immunity which, in turn, results in fewer occurrences of epidemics [27]. Increased epidemic occurrences, on the other hand, result in an increased disease burden; this necessitates more awareness campaigns which, in time, lead to increased awareness levels.

**Figure 4** Causal loop diagram for demand for immunization dynamics
Loop B2, a balancing loop, represents the dynamics involved in the effectiveness of healthcare systems. With a time delay, increased effectiveness results in increased level of trust, thus increasing the demand for immunization services. However, as the demand for immunization services increases, the resources are depleted and the workload increases, thus causing a reduction in the effectiveness of the health systems. Loop R1 is a reinforcing loop which shows a growing decline in the number of immunizations performed due to inadequate provision of immunization services. As the number of children to be immunized increases, there is need to increase the capacity of the healthcare services.

Figure 5 presents two balancing loops B3 and B4. Loop B3 seeks to achieve the set immunization targets by focusing on health service delivery. The difference between the targeted number of children and the actual number of children immunized creates a gap which triggers an increase in government funding for immunization programmes. An increase in funding results in increased resources and health centres which, when coupled with a high level of service, will increase effectiveness; this, in turn, improves the demand for immunization.

Loop B4 is a balancing loop, which represents the limiting factor resulting from increased demand as far as the effectiveness of the healthcare system is concerned. An increase in demand results in increased workload which reduces health worker motivation, resulting in reduced level of service, which affects the provision of healthcare services.
The effectiveness of the health system can be achieved through a combination of factors such as availability of resources (health centres, vaccines, transport), level of service of health workers (skills, workload) and effectiveness of monitoring systems.

**Insights from the causal loop diagram**

From the causal loop diagram, a broad integrated view of the system is provided for stakeholders to prioritize and set policies. The different policies and interventions that need to be developed for the improvement of immunization coverage can then be generated from a clear understanding of the complexity of the system.

**Parental participation subsystem**

The parental participation subsystem is based on the case study that was undertaken and the immunization studies of other researchers [7, 27, 29, 30]. From the study, the key issues that affect parental participation are grouped under the following, as shown in the causal loop diagram in Figure 4:

- Effectiveness of health centres results in increased availability of immunization services to mothers, which in turn increases the number of performed immunizations.
- Mothers’ availability is associated with family problems (single parenting, number of children in the household), high poverty levels and social status (mothers’ work, work schedule).
- Level of trust in the health system is increased as the effectiveness of the health centres increases. Increase in level of trust results in a change in attitude towards increased demand in immunization. Issues that are associated with the effectiveness of health centres include hygiene, levels of injection safety, number of health workers at the health centre, and health workers’ response to the mothers.
- Level of immunization awareness is associated with mothers’ level of literacy, belief in myths, effect of media, level of education and effectiveness of community mobilization.
- Immunization dropouts (infants who take initial doses but do not complete the immunization schedule) are associated with the level of civil unrest (presence of wars), children’s health, level of complexity of immunization schedule, provision of health cards and reminders.

**Healthcare subsystem**

The healthcare subsystem is based on field studies carried out in a number of health centres in the Mukono district and various other studies. The key issues associated with the healthcare system are grouped under the following, as shown in the causal loop diagram of Figure 5:

- Level of service is associated with health worker motivation resulting from the provision of allowances, level of safety and workload. Increased skill level resulting from the provision of quality training increases the level of service which in turn increases the effectiveness of the health system.
Effectiveness of monitoring of immunization activities involves the following: monitoring systems for adverse events, documentation of immunization activities, display of immunization activities, reporting of immunization activities and reviews of immunization plans.

Effectiveness of immunization campaigns is affected by the number of campaigns in a year, availability of allowances, sufficient time for planning and effectiveness of communication.

Efficiency of health facilities is affected by the availability of resources (finance, equipment, logistics) as well as monitoring of immunization activities.

Validation

The initial causal loop diagram generated from the field studies was presented to various stakeholders for their comments and feedback on understanding of immunization coverage problems. Thereafter, specific interviews were conducted with health workers, district health workers and mothers to improve the resulting causal loop model, and further qualitative analysis led to refinement of Figures 4 and 5.

Conclusions and future work

Systems dynamics has been used to capture and analyse complex interactions between behavioural, technical, policy and cultural issues. This provides a broad integrated view of the immunization system which facilitates communication and caters for the different stakeholder viewpoints. The synthesis of the various theoretical concepts through the use of causal loop diagrams facilitates the understanding of the immunization system which enables agreement on different policies and priorities. Examining causal loop diagrams enables decision makers to focus on the root causes of shortcomings and not the symptoms alone. It is through such understanding that effective decisions and policy interventions that are suitable for communities such as those in developing countries can be designed.

Ongoing work involves development of the quantitative model and applying simulation modelling to test different healthcare policies using ‘what if’ analysis, with the aim of improving policy analysis in immunization coverage. The causal loop diagrams are converted into stock and flow diagrams which are defined by mathematical equations where variables are given initial numerical values emanating from historical data. The aim of developing the model will be to show the relationships, trends and effects of key variables by testing various scenarios.

Notes


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Discursive gaps in the implementation of public health policy guidelines in India: The case of HIV testing

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ABSTRACT

The implementation of standardized policy guidelines for care of diseases of public health importance has emerged as a subject of concern in low and middle-income countries (LMIC) globally. We conducted an empirical research study using the interpretive policy analysis approach to diagnose reasons for gaps in the implementation of national guidelines for HIV testing in Indian hospitals. Forty-six in-depth interviews were conducted with actors involved in policy implementation processes in five states of India, including practitioners, health administrators, policy-planners and donors. We found that actors’ divergences from their putative roles in implementation were underpinned by their inhabitation of discrete ‘systems of meaning’—frameworks for perceiving policy problems, acting and making decisions. Key gaps in policy implementation included conflicts between different actors’ ideals of performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual performance of core tasks and conformance with policy, and problems in communicating policy ideas across systems of meaning. These ‘discursive’ gaps were compounded by the lack of avenues for intellectual perfor-
deviations from recommended standards of practice in Delhi. Kamat (2001) reported widespread instances of presumptive treatment of malaria by private practitioners in a Mumbai suburb. Chakraborty and Frick (2002) have reported shortcomings in private practitioners’ treatment of acute respiratory infections in children, evaluated against a standard of WHO-recommended guidelines. Gross variations in tuberculosis treatment among private practitioners have been reported frequently in India, notable studies including Uplekar, Juvekar, Morankar, Rangan, and Nunn (1998) and Prasad et al. (2002).

The phenomenon is also well documented in other low and middle-income countries (LMIC). Health professionals’ treatment of malaria in Sudan, childhood diarrhea in Thailand and sexually transmitted infections (STI) in South Africa respectively has been reported to diverge from standardized norms (Mannan, Malik, & Ali, 2009; Howne, Higginbotham, Freeman, & Dibley, 2003; Schneider, Chabikuli, Blaauw, Funani, & Brugha, 2005), while in Somalia practitioners have been found to disregard global recommendations for tuberculosis management (Suleiman, Houssein, Mehta, & Hinderaker, 2003). There is also evidence of widespread divergence from policy recommendations in the case of dengue diagnosis (Ng, Lum, Ismail, Tan, & Tan, 2007) in Malaysia, management of chronic obstructive pulmonary disease in Morocco (Benzouhoud, Trombati, Afifi, Aichane, & Bouayad, 2007), and antimicrobial prescription for paediatric respiratory tract infections in Argentina (Aznar, Mejía, Wighton, & Fayanis, 2005) respectively.

What underlies this ubiquitous phenomenon of policy-practice gaps? Frontline practitioners’ divergences from standardized policies have also been reported in high-income country (HIC) contexts, with developed regulatory mechanisms. These are typically ascribed to contests around policy content — the evidence base for, or appropriateness of a particular set of guidelines (Chiao et al., 2010; Warwick, 2010). However, viewed in LMIC contexts, given the greater prevalence of diseases of global public health importance, and the general recognition of deficit accountability systems and health market failures, the problem has naturally assumed a greater significance. Prevailing diagnoses of policy-practice gaps from LMIC include the bearing of manifold influences on the evidence base for policy recommendations (Howne et al., 2003; Paredes, de la Peña, Flores-Guerra, Díaz, & Trostle, 1996), and the failings of health systems, particularly regulatory systems (Haines, Kuruvilla, & Borchert, 2004).

In the Indian context – Das and Hammer established that doctors in Delhi often did not comply with regulations in spite of being aware of them (2004), and suggest that incentive structures for doctors in both private and government sectors do not promote their uptake of standard guidelines. Kamat (2001) observed that private doctors in both private and government sectors do not promote their recognition as reasons for poor implementation of public health policies in India (Das Gupta, Khaleghian, & Sarwal, 2003; Muraleedharan & Nandraj, 2003). Bhat and Maheshwari (2005) have highlighted vulnerabilities and lack of capacity to execute their regulatory functions have also been implicated as reasons for poor implementation of public health policies in India (Das Gupta, Khaleghian, & Sarwal, 2003; Muraleedharan & Nandraj, 2003). Bhat and Maheshwari (2005) have highlighted vulnerabilities and lack of capacity to execute their regulatory functions have also been implicated as reasons for poor implementation of public health policies in India (Das Gupta, Khaleghian, & Sarwal, 2003; Muraleedharan & Nandraj, 2003). Bhat and Maheshwari (2005) have highlighted vulnerabilities and lack of capacity to execute their regulatory functions have also been implicated as reasons for poor implementation of public health policies in India (Das Gupta, Khaleghian, & Sarwal, 2003; Muraleedharan & Nandraj, 2003). Bhat and Maheshwari (2005) have highlighted vulnerabilities and lack of capacity to execute their regulatory functions have also been implicated as reasons for poor implementation of public health policies in India (Das Gupta, Khaleghian, & Sarwal, 2003; Muraleedharan & Nandraj, 2003).

The putative architecture of implementation

How are national guidelines for health care supposed to be implemented? Table 1 charts the key groups of actors involved in the implementation of public health guidelines in India, with their putative functions indicated in italics. Firstly, medical practitioners are obliged to conform to national guidelines in managing their patients. For the purposes of this study, we have focused only on recognised practitioners in urban government and private hospitals, trained in the allopathic (Western) system of medicine. Within hospitals, administrators including heads of departments and superintendents are responsible for staff behaviour. The National AIDS Prevention and Control Programme (NAPCP) publishes and promulgates policies and guidelines for various aspects of HIV care and control, including for HIV testing. Finally, international donors and technical organizations have a professed role in the development and propagation of public health guidelines.

It cannot be assumed that actors’ participation in policy implementation is shaped solely by formal rules and policies. Policy theorists Hjern and Hull (1982) contend that in real-life contexts implementation processes frequently do not coincide with the “written constitutions” which define actors’ putative roles. In order to investigate problems of implementation, it becomes necessary to undertake empirical research to elaborate “how policy problems are defined and addressed” by the actors involved in the implementation process (ibid). In this study we adopt precisely such an approach, of investigating gaps in the implementation of public health policy guidelines from the perspectives of the participant actors.

Interpretive policy analysis

In exploring the reasons for policy–practice gaps in this study, the interpretive approach of policy analysis is adopted, in which events and phenomena are viewed through the lens of the interpretations of actors. Furthermore, the interpretive approach of policy analysis is adopted, in which events and phenomena are viewed through the lens of the interpretations of policy actors interviewed, and their putative roles in implementing public health guidelines.

### Table 1

<table>
<thead>
<tr>
<th>Policy actors interviewed, and their putative roles in implementing public health guidelines.</th>
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<tr>
<td><strong>Development</strong></td>
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<tr>
<td>Medical practitioners (32 participants)</td>
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<tr>
<td>Public health authorities</td>
</tr>
<tr>
<td>Hospital administrators (7 participants)</td>
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<tr>
<td>International actors (4 participants)</td>
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participant actors (Yanow, 2000). This approach relies on in-depth qualitative research methods and is derived from constructivist epistemologies in social research which aim to “include multiple voices and views in their rendering of lived experience” (Charmaz, 2000, p. 525). The approach requires the analyst to be immersed in the beliefs of participants to understand their purposes and motivations for actions. In accessing these interpretations of actors, interpretive analysis can account for the role of various factors including beliefs, assessments of realities, values, self-interest and domiantory power in shaping their actions and interactions.

The concept of ‘systems of meaning’ is integral to the interpretive approach, signifying how different actors construct their realities, define problems and identify solutions for the problems (Yanow, 2000). Policy theorist Vickers (1965) had previously proposed that policy actors form ‘appreciations’ of given problems, a concept analogous to ‘systems of meaning’. Appreciations consist of actors’ judgements around the facts of the problem (reality judgements) combined with value judgements answering the question “what ought to be?”, which together inform their decisions around action – action judgements. Reality, value and action judgements represent categories on the basis of which actors’ explanations of their actions can be thematically organized (see Fig. 1) - this framework finds application in organizing the results in this paper. Collectives of actors belonging to the same groups and organizations may share cognitive mechanisms and decision-making processes, and use similar language to discuss policy problem, hence forming ‘communities of meaning’.

**Methods**

The study was conducted in nine hospitals in five Indian states, using in-depth social science research methods. Principles of maximum variation were applied in respect to identifying hospitals for the study, based on two criteria: type of hospital and geographical zone. Nine urban hospitals were selected with representation from the government, private, and charitable sectors; and located in five cities, one each from the North, West, South, East and Central Zones of the country. Four government hospitals, three private hospitals and two charitable hospitals were identified purposefully. In these five hospitals 32 practitioners working in specializations associated with HIV testing were selected, also purposefully, ensuring distribution across specializations, gender and experience. Additionally 14 senior officials representing hospital authorities, national health programmes, and international organizations were interviewed.

In-depth interviews were conducted with all study participants by the first author of this paper over 18 months in the years 2005–2007. Appointments were sought telephonically, by email or by personal visits. All participants were interviewed in hospitals or offices which were their usual places of work. Topic guides consisted of queries around respondents’ participation in the implementation of HIV testing policies. We focused on the following aspects of the national HIV testing policy (NACO 2003), which have been reported to be infringed widely by medical practitioners:

- The requirement of specific written informed consent from a patient before conducting a HIV test
- Prohibition of HIV testing as a pre-condition for performing a procedure such as surgery (also referred to as mandatory or pre-surgical testing)
- Strict confidentiality of HIV test results, including from health workers not directly involved in the care process.

Respondents were encouraged to discuss the topics at length, and interviews were guided by probes. Data collection was concluded when representatives of all the groups identified as being involved in implementation had been interviewed – no “new” names of organizations were being identified by respondents.

The “framework” approach for applied policy analysis, combining inductive and deductive approaches was used to organize and analyze the data from interview transcripts (Ritchie & Spencer, 1994). A thematic framework consisting of three levels of thematic codes was developed: a *a priori* themes drawing on the topic guide, emergent issues arising from interviewees’ responses and analytical themes based on clustering of emergent themes (see Table 2). The analytical theme categories were organized around the meanings that actors attached to implementation processes, in keeping with the interpretive approach (see above). Vickers’ formulation (1965) of the appreciative dimensions of policy actors’ responses was useful in classifying respondents’ explanations of their actions (see Fig. 1). The framework was applied systematically to the data, using the qualitative data programme Atlas Ti 4.2. Coded chunks of data were retrieved, organized into charts and written up.

The ‘framework’ demonstrates the systematic nature of the analysis – a criterion of reliability. Care was also taken to ensure that a multiplicity of perspectives is represented, and that the views of a particular group are not presented as the sole truth about a situation. Preliminary findings were presented to study participants, to ensure their credibility or trustworthiness (Yanow, 2000), a key standard of quality in interpretive research.

Institutional ethics clearance was obtained from committees of the academic institution where the study was originated, and by a local ethics review committee. All interviews were conducted and recorded following verbal consent and presentation of a standardized information sheet. All transcripts and recordings were accessible only to the authors, and care was taken while writing up to delete particulars of individuals and institutions which may have led to their identification.

**Results**

The perspectives of different groups of actors on their own participation in the implementation process are presented in Table 2.
sequentially, thus allowing and leading up to the diagnosis of policy implementation gaps.

A. Medical practitioners: primacy of performance

Actions

While all the doctors were aware of the guidelines, a majority reported that they contravened guidelines for informed consent (30/32) and confidentiality (27/32) on occasion. Pre-surgical HIV testing although practiced by fewer doctors (20/32) was probably as frequent a practice. Most surgeons reported routinely ordering pre-surgical HIV tests for their patients. If these were proscribed by hospital authorities they resorted to subversive means such as sending their patients to nearby private laboratories to be tested, or conspiring with hospital pathologists to perform tests unofficially. In other instances, practitioners reported that they complied with the national HIV testing guidelines. However, surface conformance did not always imply engagement with underlying principles of the guidelines, especially in the case of informed consent.

We have always taken informed consent. How much information the clients have understood is a separate issue. How do we validate or verify that? Humne to bata diya [We did what was required]. Now how much they have ingested, understood, we can’t say that, we can’t guarantee that. (Senior microbiologist, government hospital)

Paradoxically, practitioners sometimes treated the consent procedure as a means to persuade, even coerce the patient into taking the test.

In their explanations of these different actions, practitioners in both private and public hospitals emerged as a distinct ‘community of meaning’ (Yanow, 2000), sharing particular cognitive mechanisms, engaging in similar acts and using similar language to discuss policy problems. Their divergences from policy norms are explained by a mix of values which were often at odds with the emphasis on autonomy and patient choice which underpin HIV testing policies, and by pragmatic considerations. An overarching theme is that practitioners tended to be preoccupied with the performance of core clinical tasks, often at the expense of conformance with policy guidelines. Table 3 summarizes practitioners’ explanations of their divergent actions.

Practice values and goals

Informed consent. Doctors’ emphasis on clinical outcomes and cure represented the value placed on expediting clinical tasks with efficiency. The first of these tasks is diagnosis and in this context, procedures such as informed consent for a HIV test were sometimes seen as unwelcome obstacles. A related observation is that the doctors generally approached problems from the position of belief in the innate beneficence of medical intervention, and hence asking for consent from patients presented a paradox (see Fig. 2). Doctors saw diagnosis as a duty towards patients, and part of their embedded functions within healing institutions.

This business of taking informed consent from a patient before doing a HIV test... I don’t know where this has come from. A patient has come to you. He is sick, he needs your help. Will you be thinking about this or about treating him? (Physician, private hospital)

The impulse to diagnose a patient was also indicative of the high valuation of the scientific challenge of the clinical procedure. Different diagnostic tests were ordered to maximise knowledge about a patients’ condition — a gynaecologist reported the importance of ‘knowing where we stand’ in order to be able to ‘take all the measures’ for further management. This inclination to investigate may have frequently overridden considerations of patient autonomy in choosing to be tested.

In managing their patients, doctors typically followed unwritten rules of prioritization of time and resources, based on the seriousness of patients’ conditions. In general hospitals with patients with a wide range of serious illnesses, the needs of patients with HIV/AIDS were often not the most imminent. For some doctors, the ‘exceptional’ set of rules (e.g. specific written consent, confidentiality) and allocation of resources (e.g. counsellors) around HIV testing militated against prevailing logics of patient equality and need-based prioritization.

For counselling, we need a man, a patient, a sofa and a cup of tea, and a room. And there in the emergency, you have three patients on one bed, one is alive, one is dying and one is dead. I am not against consent and counselling. What I am saying is the ground realities are entirely different. (Senior physician, government hospital)

Relationships between patients and medical practitioners were often fundamentally asymmetric, and patients frequently asked doctors to make their decisions for them. While this may have been contrary to the reciprocal logic of informed consent procedures which required patients and doctors both to be autonomous and mutually aware of their rights, it was seen by a number of doctors as a sign of essential trust, and valued by them.

They all say ‘well doctor if it is your child what will you do? Whatever you would do for your child, do the same. We leave it to you’. So there is a different relationship. That’s one of the great things of working [in India]. (Surgeon, private hospital)

Table 3

<table>
<thead>
<tr>
<th>Medical practitioners’ systems of meaning.</th>
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<tbody>
<tr>
<td>Action judgements</td>
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<tr>
<td>Value orientations</td>
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<tr>
<td>Clinical efficiency</td>
</tr>
<tr>
<td>Inmate beneficence of medical care</td>
</tr>
<tr>
<td>Duty to diagnose</td>
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<tr>
<td>Scientific challenge of diagnosis</td>
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<tr>
<td>Trust between patient and provider</td>
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<tr>
<td>Patient equality</td>
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<tr>
<td>Professional thoroughness</td>
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<tr>
<td>Economy</td>
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<tr>
<td>Reality judgements</td>
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<tr>
<td>Right to safety</td>
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<tr>
<td>Perception of personal risk</td>
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<tr>
<td>Perception of deprivation</td>
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<tr>
<td>(government/charitable)</td>
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<tr>
<td>Patients’ expectations</td>
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<tr>
<td>Co-worker expectations</td>
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Mandatory testing. In the case of surgeons, role perceptions were even more narrowly focused on the specific task of completing the surgical act successfully. Mandatory HIV testing for some was one of many necessary steps in preparing for the surgery, and regulations preventing mandatory testing were widely regarded by surgeons as obstacles in the way of performing their primary defining role.

In some instances pre-surgical testing was regarded as an essential part of a thorough clinical work-up for patients. It was advocated in private hospitals as part of a package of infection control interventions, and was seen as a signifier of quality in the workplace, and linked to professional values around hygiene and safety. In under-resourced public hospitals, costs for protective equipment for surgeons are typically borne out-of-pocket by patients, and in government and charitable hospitals, practitioners promoted mandatory testing as a cost-saving alternative to adopting universal precautions during surgery.

Confidentiality. Lastly, a key value consideration upheld by doctors was that of teamwork and solidarity between co-workers. The rights of all health workers to optimal protection from infection were invoked in defence of practices of mandatory testing. Fairness in allowing all health workers access to patients’ HIV status was a consideration which contradicted confidentiality policies.

Reality judgements
Informed consent. Patients’ actions and attitudes were key reality considerations for doctors. Reportedly patients often approached the clinical encounter trusting the doctor to make the best decisions for them, and hence asking for written consent represented a rejection of that expectation. Further, patients’ expectations were said to be usually oriented around alleviation of their physical ailments, and formal procedures for consent and counselling were often regarded by them as time consuming diversions. Some patients were reportedly offended by the presumed implication of promiscuity in asking them to consent to a HIV test.

Mandatory testing. An important “reality” for doctors was the risk of infection by a HIV positive person through needle-stick injuries or during interventional procedures. Although the likelihood of their being infected in scientific terms was very low, the fear of infection was considerable among most doctors, and particularly surgeons, and motivated indiscriminate HIV testing by doctors, especially pre-operatively by surgeons.

Save ourselves! The patient comes later… There is a saying in Hindi “bhookhe pet na hove bhajan gopala” [I can’t express my devotion to God, with an empty stomach]. If we are hungry, if we are sick, if we are down, then how we will serve? (Senior surgeon, government hospital) (32)

These notions of high risk were compounded by the variably accurate perception that protective equipment available to prevent injury and HIV infection was inadequate. This was characteristic of a generalized sense of deprivation that prevailed among doctors, frequently comparing their conditions against an imagined ideal of standards of facilities in Western countries.

Confidentiality. In some instances, staff who worked in operation theatres with surgeons expressed their objections to participating in surgery without knowledge of patients’ HIV status. Supporting staff are vitally important in the successful undertaking of surgical procedures, and their perspectives were important in motivating mandatory pre-surgical HIV testing. Concerns around the risk of HIV infection through needle-stick injuries for nurses, paramedical staff and hygiene workers were also voiced by doctors in all sectors of hospitals.

Maintaining confidentiality is one issue… but at a lot of times, simple waste disposal becomes a problem. We are supposed to have segregated waste, but at times, we do not get the bags. If we look at a sweeper, taking away the waste from the hospital, you will realise how dangerous it is for him. He is carrying all that waste which has got a lot of fluids, lot of sharps, he is dripping the waste on the floor. How dangerous it is! Just because he is not aware of these things, and how dangerous it is for him. (Junior surgeon, government hospital) (32)

Reportedly health workers also widely felt that they needed to know which patients were HIV positive, for which they resorted to labelling of case files or beds. Such practices, while breaching confidentiality norms, were widely tolerated by doctors with a sympathetic perspective of the needs of their co-workers.

Apart from a shortage of resources, doctors described their constraints in terms of lack of time and manpower and of excess of patients. For instance the idea of strict confidentiality in a crowded consulting room with large volumes of patients and limited hours was described as ‘completely impractical’, by one gynaecologist in a government hospital. Given a low staff to patient ratio, relatives of patients were usually co-opted to perform various basic tasks of care provision, in the context of which confidentiality of patients’ HIV status was highly improbable.

B. Public health functionaries: negating regulatory roles

Actions
Hospital administrators, and health and HIV/AIDS programme officials too did not perform many of their putative regulatory functions in ensuring the implementation of public health policy guidelines. Superintendents and heads of department in government and private hospitals alike displayed considerable leniency towards infringements and took few measures to streamline HIV testing practices among their staff. HIV/AIDS programme officials too reported widespread problems in implementing guidelines, particularly in the private medical sector.

These public health functionaries also cited a broadly homogenous set of meanings and motivations for these divergent actions - the specific explanations of two groups of functionaries are summarized in Table 4. A central observation here is that these actors found more meaning in supportive and developmental...
activities, than in their regulatory functions. The relative neglect of their roles in enforcing and regulating standards was also linked to overriding pragmatic considerations such as their inability to dictate the behaviour of practitioners and the apparent lack of resources and capacity to enact regulations.

Value orientations
Among hospital authorities, role identities were typically focused around ensuring the efficient delivery of clinical care, and tasks such as ensuring guideline implementation were seen as secondary, and sometimes as impediments. Being medical professionals themselves, it was evident that in practice administrators often encouraged or supported practitioner discretion rather than uniform compliance to policy. Heads of department also cited solidarity with their subordinates as explanations for their lack of enforcement of policies for mandatory HIV screening and confidentiality.

There are senior doctors and junior doctors and everybody would like to know about the patients’ (HIV) status. Probably it would not be fair if I knew and I did not tell my junior doctor, because that means I am taking the precautions and she is not. (Head of department, government hospital)

The HIV/AIDS programme officials also expressed their preference for supportive rather than regulatory-type engagement with medical providers. One official specifically opposed the institution of laws around HIV testing, contradicting the official stance at the time.

Frankly speaking if you put some kind of regulatory mechanism, at least in India I think, that may not serve the purpose… because it is democratic you know. If we keep insisting on a HIV law, every hospital should have this, should have that, then people will come out with their own ways… (Senior official, national HIV/AIDS programme)

Programme officials generally emphasised their role in promoting voluntary change in practitioner behaviour, by providing enhanced educational and workplace resources. They idealized the growth and expansion of HIV care services and project activities, and were preoccupied with financing and instituting new services and facilities (for testing, treatment, training), in the context of which the ‘command and control’ philosophy of regulation appeared inimical. A state level official remarked that it was not desirable to combine the programme’s preferred role of institution builders and resource providers with a policing function.

Remarkably, lack of conviction about the appropriateness of the policies was a common theme among HIV/AIDS programme officials, who were ostensibly owners and promulgators of the policies. Many programme officials shared the reservations expressed by practitioners around the emphases on patient autonomy and on procedural formalities such as written consent and counselling. ‘[Practitioners’ ] doubts [around the guidelines] are absolutely valid, and whatever practices they are doing, they have a reason, it is not unnecessary’, averred a national programme official.

Reality judgements
Frequently, the functionaries’ departure from regulatory tasks was explained by their incapacity to perform these tasks in the face of situational constraints. Administrators in both government and private-run hospitals emphasised the importance of maintaining harmonious relationships with the practitioners in their employ, in order to ensure efficient hospital functioning. Relationships with subordinates were delicate and some department heads perceived a lack of acceptance of their regulatory functions, by staff as well as administrators. One hospital officer in charge of HIV and infection control reported a lack of support from superior authorities in implementing policy guidelines which prevented him from performing his duties

All these things are not on the priority list of administrators. There is no culture of this - public health work is not recognised [in hospitals] (Head infection control, government hospital)

Lack of true authority over the behaviour of medical providers, was also a resonant theme among HIV/AIDS programme officials. HIV/AIDS programmes represent administrative structures parallel to the general health services, and doctors in government hospitals are not in direct relationships of accountability to HIV/AIDS programme officials (see Fig. 3). Due to the prevailing balance of power, programme workers (such as technicians and counsellors) stationed in hospitals were unable to exercise control over doctors’ practices, and programme officials did not have the necessary authority over hospital administrators to be able to enforce norms. In the case of private providers, programme officials renounced a regulatory role altogether. A state programme official emphasised that the physical task of regulating private providers’ practices was beyond the resources and means of the programme.

Another key relational dynamic, which may have contributed to programme officials’ lack of engagement with the principles of HIV testing policy, is their intellectual subordination to international
actors. A senior official commented that national policy guidelines had not developed through means within his control, and cited the World Health Organization and other international agencies as influential sources of guidance in this respect.

C. International actors: streamline and standardize

Representatives of technical agencies were influential in determining the contents of national HIV testing policies. They valued ideals of patient autonomy in medical care as contained in the HIV testing policies and favoured the standardization of medical practices on these lines, but experienced problems in communicating policy messages to implementers.

Value orientations

The international actors interviewed widely perceived their role to be that of setters of norms and standards. They felt that it was important to enforce standards for consent and confidentiality, which they considered to be universal principles. They tended to place a high value on conformance and on streamlining the practices of doctors to meet global norms. The officials interviewed typically expressed strong belief in the principles underlying the HIV testing guidelines, particularly on the importance of patient autonomy in medical care interactions.

(T)here should be confidentiality, there should be systems of counselling or informing the patient. Even that is not happening here. Why? In the West, people make sure that the patient is the one who decides. The doctor tells you the options and you decide what you want.... Eventually in India, people will demand that you treat me with decency, with respect (Officer in a United Nations (UN) technical agency)

They were largely dismissive of doctors’ explanations for infringements of HIV testing policies, which they believed to be spurious.

Reality judgements

Technical agencies have a clear mandate to influence the contents of national policy guidelines. However the officials’ efforts to exercise this mandate were occasionally impeded by a lack of communication and comprehension. One UN official recounted a discussion with HIV/AIDS programme officials in which “routine offer of testing” was conflated with “routine testing” (with contrary connotations) – indicative of generalized problems of conveying underlying principles of guidelines to implementing actors who did not share the same beliefs and ethical frames of reference.

D. Diagnosing the gaps

Disparate meanings

Implementing actors’ inhabitation of discrete world-systems of meaning and purpose – symbolized by amalgams of philosophical and pragmatic considerations – represents a fundamental obstacle for the universal implementation of standardized policy guidelines. A central observation here is that doctors’ and public functionaries’ perceptions of the purpose of their work tended to focus on performance of core tasks rather than on conformance with policy guidelines. For both these groups of actors, their decisions were highly contingent on such factors as their relationships with contiguous actors, the variable adequacy of resources, and inconsistent support from administrative structures.

In these contexts of uncertainty, they similarly reported finding most meaning in the performative and entrepreneurial aspects of their roles, and conformity with restrictive and regulative tasks and with the precisely articulated rationales of HIV testing guidelines was not always a priority. Said a government hospital gynaecologist: ‘because we know that we are not able to maintain confidentiality, so we take it loosely.’ These (policy guidelines) are ideals which have to be strived for, not necessarily to be achieved’, said one government pathologist.

The problem of communicating ideas contained in the policy guidelines across disparate communities of meaning is best exemplified by the case of informed consent. While international actors – with their value orientations fixed on patient autonomy – regarded informed consent norms to be of paramount importance, practitioners preoccupied with performative goals were confused by the paradoxical logic of consent and regarded it chiefly as an impediment to care. Their adoption of guideline norms often remained specious and superficial, without intrinsic engagement or comprehension of their value.

Unshared platforms

‘Communities of meaning’ – the discursive worlds of medical practitioners, of public health functionaries, or of international actors, are formed in contexts of their shared working environments, common goals and similar logics of action. The insularity of these communities and rigidity of their thoughts and ideas were reinforced by the lack of opportunity to engage in mutual meaningful dialogue. By several accounts, there was little communication between the different government departments involved in implementing the guidelines. Private sector practitioners particularly expressed a sense of intellectual exclusion, with little academic engagement of any description with other institutions, public or private. Said one private hospital practitioner: ‘for private [doctors], there are not many options [to train in HIV care]. There is no effort to involve us’. Government practitioners too reported that there were few opportunities for formal dialogue and deliberation within their hospitals and with representatives of the HIV/AIDS programme, even on contentious aspects of the HIV testing policies.

Problems of power and authority

Gaps in implementation of policy guidelines were compounded by complexities of power relationships between groups of actors, which did not reflect the ‘expected’ hierarchy of policy implementation. The most apparent of power imbalances observed was medical professionals’ ability to resist authority in all its forms. In the poorly regulated private sector, there was little recognition of the authority of government agencies, and administrators perceived no reason to enforce the guidelines among their staff. ‘The HIV/AIDS programme has no jurisdiction over us’, emphasised a private hospital administrator. In government hospitals, administrators appeared to express little more than notional authority over practitioners’ HIV testing practices.

The asymmetric power dynamics in transferring HIV testing policies from international agencies to national programmes may be important in determining the manner of their implementation. The intellectual dominance of international technical agencies in setting standards for HIV testing was largely unquestioned, and HIV/AIDS programme officials reported a lack of engagement with the contents of the guidelines. Another critical, related obstacle to guideline implementation lies in the rift between lines of hierarchy in the HIV/AIDS programme and the general health services (see Fig. 3). Hospital personnel are employees of general health services and not of the HIV/AIDS programme, and programme officials were largely unable to exercise real authority in hospitals.

Discussion

In the global context of LMIC health policy, frontline practitioners and other health systems actors have been viewed primarily
in terms of their instrumental roles in the implementation of public health policies (Peters, 2003; Rowe, de Savigny, Lanata, & Victora, 2005). The main contribution of this study is in understanding health policy implementation in India from the "emic" perspectives of the various participant actors. We have elaborated the perspectives of discrete 'communities of meaning' constituted, respectively, of medical practitioners, public health functionaries and international actors, and diagnosed the implementation gaps as resulting through a combination of disparities in different implementing actors' systems of meaning, deficient avenues for dialogue between actors and unaccounted power balances in the implementation process. The study is based on individual accounts and hence biased towards individualized explanations, to the relative neglect of broader structural factors and contexts. We cannot also claim that the setting of hospitals in five cities in different geographical zones encapsulates the entire Indian situation. Nevertheless the empirical findings gleaned from a systematic research process represent credible insights into public health policy processes in India.

While there are no other studies in LMIC which attempt to understand implementation gaps holistically from the perspectives of different involved actors, there are a few which have focused on particular groups of actors. Howteerakul et al. (2003) and Paredes et al. (1996) respectively elaborated how Thai and Peruvian doctors' interpretations of policies to be implemented are informed by their values and experiences. Kapiriri and Bondy in a study on Ugandan health planners and practitioners (2006) have observed that their decisions were guided as much by personal experience and discussions with colleagues as by formal guidelines.

Viewed in the Indian context, our findings support the hypotheses of Kielmann et al. (2005), Dayte et al. (2006) and Kamat (2001) of the highly contingent nature of medical practice, in which following policies is often not a preeminent consideration for practitioners. Our observations also resonate with Sheikh and Porter's study on mandatory HIV testing (2009) and Miljeteig and Norheim's study of neonatal care (2006), each of which document how Indian doctors' ethical orientations differ from accepted Western bio-ethical norms. Our findings also demonstrate that practitioners' divergence from putative roles cannot automatically be conflated with failures of ethics or commitment to service (Das & Hammer, 2004) — disparate values and 'meanings' may be as significant an explanation of divergent practices.

The 'meanings' of Indian public health functionaries, also heavily focused around ethics of performance and hinging on uncertain upstream and downstream relationships with other actors, are largely unexplored in the literature, and hence our findings represent unique contributions in these areas. The vulnerable position of these functionaries, entrusted with the key role of implementing national policies but doubly subjected to the obduracy of practitioners and the ascendant voice of international actors, is a troubling commentary. The perspectives of international actors and their relationships with Indian national health functionaries also represent a poorly explored domain.

Conventional prescriptions for implementation gaps in LMIC are often concentrated on enhancing central control over implementation of guidelines, by means such as the introduction of stronger regulations and laws, and strengthening supervision and audit (Bhardwaj & Divan, 2005; Rowe et al., 2005). These strategies typically do not account for implementing actors' varied and sometimes divergent 'meanings', notions of purpose and accomplishment, and prevailing dynamics of interrelationships. Our analysis highlights that it is pertinent to look beyond short-sighted ideals of ensuring that frontline practices mirror the intentions of policymakers, towards deeper, more particular systemic solutions.

A deliberative mindset

The diagnosis of discursive gaps suggests that policy-planners would be advised to acknowledge the deliberative possibilities of implementation, and take steps to enhance the quality of and opportunities for dialogue between different groups of actors implementing public health policies, including between different government departments engaged in implementation. Deliberation also has the virtue of making actors' concerns, needs and interests transparent and can help curtail the role of prevailing power imbalances (Healey, 1993). An emphasis on communication and cross-learning is critical if public health policies are to be reconciled with the disparate worldviews and motivations of actors engaged in administering and delivering health services, and with the socially entrenched functions and operations of health care institutions through which they are implemented.

Including voices from the field

In high-income countries, it is often the norm that practitioners' experiences inform the development and revision of practice guidelines (Chiao et al., 2010; Warwick, 2010). In this analysis however, practitioners' engagement with existing guidelines was tenuous, and the 'alternative' perspectives they espoused remain 'underground', and untested for ethical and scientific validity. Support for in-service training and participatory educational programmes for practitioners, and the institution of participatory policy fora to deliberate practice guidelines can help to develop cultures of debate, and also practitioners' capacities to represent legitimate local concerns. Instituting systems for the representation of users of health care in policy development and refinement potentially represents a longer-term goal.

Empowering implementers

Finally, the vulnerable position of public health functionaries vis-a-vis both practitioners and international actors reflects the acute need to strengthen country institutional structures for effective stewardship, and to set agenda for national health. Country-level public health functionaries in particular are in an advantageous position to bridge the practical knowledge of practitioners and the universal knowhow of international agencies, and must be supported financially, materially and morally to provide balanced leadership to policy initiatives.

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